Note remarks

: MB 2,3 H : 28.05.90 Test sheet Edition : 10.11.89 Replaces Test oil : ISO-4113

: 0 400 074 899 Combination no.

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF375/1700M69-4 Governer no. : 0 420 021 139

Customer-spec. information Customer : MB-NFZ

: 0M601-2.3L Engine

1st version kW : 49.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 20.00...22.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.30...12.40

Del.guantity cm3/: 3.6...3.7

100 s: (3.5...3.8)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1

Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000Speed Aneroid pressure h: 1100

Del.quantity : 30.0...38.0)

cm3: 2.50 Spread 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 9,0...9,5
Speed rpm : 1800

4th rack travel in: 2300

: 0.00...1.00 Speed mar

SET IDLE CONTROL LEVER

POSITION

Speed : 1000 rpm Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 12...16 Setting point w/out bumper spring

Speed rpm: 375 Rack travel in mm: 5.6 Testing: Speed rpm: 250 Minimum rack trave: 10.20 Speed rpm: 375 Rack travel in mm: 5.505.70 Rack travel in mm: 5.50680 Speed rpm: 580680 Speed rpm: 1000 Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed rpm: 420 Rack travel in mm: 4,44,6 : (4,34,7)	Speed rpm : 1650 Del.quantity cm3/ : 36.538.5 1000 s: (35.539.5) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 500 Del.quantity cm3/ : 31.533.0 1000 s: (30.534.0) Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 800 Del.quantity cm3/ : 34.035.5 1000 s: (33.036.5) Spread cm3 : 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.3012.40 2nd speed rpm : 1400 Rack travel in m: 11.7012.00 3rd speed rpm : 1650 Rack travel in m: 11.4011.70 4th speed rpm : 500 * Rack travel in m: 11.6011.90 * 5th speed rpm : 800** Rack travel in m: 12.0012.30**	STARTING FUEL DELIVERY Speed rpm: 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm: 20.100.00 HIGH IDLE 1st version Aneroid pressure h: 1100
Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 1000 Pressure hPa : 950 Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000	Speed rpm: 1800 Rack travel in mm: 9.009.50 Del.quantity cm3/: 28.032.0 1000 s: (27.033.0) Spread cm3: 2.50 1000 s: (3.00) LOW IDLE Speed rpm: 375 Rack travel in mm: 5.505.70 Del.quantity cm3/: 5.06.0
1st pressure hPa : 900 Rack travel in m: 0.500.70 2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS	Del.quantity cm3/: 5.06.0 1000 s: (4.59.0) Spread cm3 : 1.00 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE (ELA)
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/ : 36.037.5	Speed rpm : 425 Rack travel in mm : (7,08,6) Del.quantity cm3/: - 1000 s: (10,518,5) Remarks: : Pin projection = 16.6016.70 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

* Setting point for negative torque control - negative retainer behind ** Reference measurement: Control-rod travel and delivery too large - position spiral spring Control-rod travel and delivery too small - position spiral spring upwards

Note remarks

: MB 2,3 a : 28.05.90 Test sheet Edition : 10.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 074 900

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF360/1900M70-4 : 0 420 021 123 Governer no.

Customer-spec. information

Customer : MB-NFZ

: 0M601-2.3L Engine

: 58.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 20.00...22.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 335.0 2nd speed Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 40.0...42.0)
1000 : (39.0...42.0)
1000 : 2.50

1000 : (3.00)

RATED SPEED

1st version

Control Lever

position degrees: 50...0 3rd rack travel in: 7,0...7,5

rpm : 2100 Speed 4th rack travel in: 2500

: 0.00...1.00 Speed rom

SET IDLE CONTROL LEVER

-POSITION

: 1000 Speed rpm

Rack travel in mm: 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 335 Rack travel in mm : 5.2	†	Speed rpm : 1900 Del.quantity cm3/ : 39.541.5 1000 s: (38.542.5)
Testing: Speed rpm : 250 Minimum rack trave: 7.50 Speed rpm : 335 Rack travel in mm : 5.105.30 Rack travel in mm : 2.50 Speed rpm : 550650 Speed rpm : 1000 Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING	** ************	Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 500 Del.quantity cm3/ : 34.536.0 1000 s: (33.537.0) : Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 800 Del.quantity cm3/ : 37.539.0 ***
Speed rpm : 400 Rack travel in mm : 3,94,1 : (3,84,2)	+++++	1000 s: (36.540.0)* Spread cm3 : 2.50 1000 s: (3.00)
TORQUE CONTROL Torque control curve — 1st version 1st speed rpm : 1000 Rack travel in m: 12.8012.90	+++++++++++++++++++++++++++++++++++++++	STARTING FUEL DELIVERY
2nd speed rpm : 1400 Rack travel in m: 12.2012.50 3rd speed rpm : 1900 Rack travel in m: 11.4011.70 4th speed rpm : 500	T + + + + + + + + + + + + + + + + + + +	Speed rpm : 100 Del.quantity cm3/ : 52.00.0
Rack travel in m: 12.0012.30 * 5th speed rpm : 800 Rack travel in m: 12.4012.70**	+++++++++++++++++++++++++++++++++++++++	1st version Aneroid pressure h: 1100
Aneroid/Altitude Compensator Test	+++++++++++++++++++++++++++++++++++++++	Speed rpm : 2100 Rack travel in mm : 7.007.50 Del.quantity cm3/ : 22.026.0 1000 s: (21.027.0)
1st version Setting Speed rpm : 1000	+++++++++++++++++++++++++++++++++++++++	Spread cm3 : 2.50 1000 s: (3.00)
Pressure hPa : 950 Rack travel mm : 0.000.20 Measurement	+	LOW IDLE Speed rpm : 335 Rack travel in mm : 5.105.30
Speed 1/min: 1000 1st pressure hPa: 900 Rack travel in m: 0.500.70	+++++++++++++++++++++++++++++++++++++++	Del.quantity cm3/: 5.06.0 1000 s: (4.59.0) Spread cm3 : 1.00 1000 s: (1.50)
2nd pressure hPa : 750 Rack travel in m: 1.802.20	+	SETTING/TESTING ELECTRONIC IDLE REGULATION (ELR)
FUEL DELIVERY CHARACTERISTICS	+ +	Control lever at idle stop Speed rpm : 360
1st version Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 39.541.0 1000 s: (38.542.0)	+++++	Rack travel in mm : (12,313,7) Del.quantity cm3/: - 1000 s: (33,041,0) Current A : 1,8 Control lever at full-load stop
Spread cm3: 2.50 1000 s: (3.0) Aneroid pressure h: 1100	+++++++++++++++++++++++++++++++++++++++	Speed rpm : 2500 Rack travel in mm : 0,01,0

Current

short-duration A: 3,0

Starting test

rpm : 100 Speed

Del.quantity cm3/: -min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop.
With n = 335 1/min. and pu = 450 mbar, control rod must move quickly to $control-rod\ travel = 0\ mm$

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device $KDEP 1077 = 15.3^{\circ}...15.7^{\circ}$ (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

* Setting point for negative torque control - negative retainer behind ** Reference measurement: Control-rod travel and delivery too large - position spiral spring Control-rod travel and delivery too small - position spiral spring upwards

Note remarks

: MB 2,0 r5 : 28.05.90 Test sheet Edition : 17.02.89 Replaces : ISO-4113 Test oil

Combination no. : 0 400 074 904

Injection pump

Pump designation : PES4M55C320RS169 : 0 410 054 959 EP type number

Governor

Governor design. : RSF375/2300M56-6 : 0 420 021 110 Governer no.

Customer-spec. information Customer : MB-PKW

: 0M601-ECE Engine

: 53.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15) Rack travel in mm : 20.00...22.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 375.0 2nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.0...33.0 1000 : (31.0...34.0)

: 2.50 Spread cm3: (3.00)

1000

RATED SPEED

1st version

Control lever position degrees: 50...0 3rd rack travel in: 9,0...9,4

rpm : 2500 Speed 4th rack travel in: 2950

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER

POSITION

Speed non Rack travel in mm : 1,7...1,8

LOW IDLE 1 Control lever

position degrees: 12...16 Setting point w/out bumper spring

Speed rpm : 375 Rack travel in mm : 7.0 Speed rpm : 100 Del.quantity cm3/ : 52.0...0.0 1000 s: (52.0...0.0) Testing: Speed rpm : 250 Rack travel in mm : 20.10...0.00 Minimum rack trave: 11.50 : 375 Speed rpm HIGH IDLE Rack travel in mm : 6.90...7.10 Rack travel in mm: 2.50 1st version : 640...740 Aneroid pressure h: 1100 Speed rpm rpm : 2500 Speed rpm : 1000 Speed Rack travel in mm : 9.00...9.40

Del.quantity cm3/ : 22.0...26.0

1000 s: (21.0...27.0)

Spread cm3 : 2.50 Maximum rack trave: 1.80 SET IDLE AUXILIARY SPRING : 400 Speed rpm 1000 s: (3.00) Rack travel in mm: 5,8...6,0 : (5,7...6,1) LOW IDLE TORQUE CONTROL Speed rpm : 375 Rack travel in mm : 6.90...7.10 Torque control curve - 1st version : 1000 1st speed rpm Rack travel in m: 12.80...12.90 Del.quantity cm3/ : 5.0...6.0 rpm : 1800 1000 s: (4.5...9.0) 2nd speed cm3 : 1.00 Rack travel in m: 12.20...12.40 Spread 3rd speed rpm : 2200 Rack travel in m: 11.90...12.10 1000 s: (1.50) SETTING PNUEUMATIC FAST IDLE Aneroid/Altitude (ELA) Compensator Test rpm : 425 Speed Rack travel in mm : (8,6...10,2) 1st version Del.quantity cm3/: -1000 s: (12,0...20,0) Pressure hPa : 950 Rack travel mm : 0.00...0.20 hPa : 400 Vacuum 1st pressure hPa : 900 Rack travel in m: 0.50...0.70 Remarks: 2nd pressure hPa : 750 Rack travel in m: 1.80...2.20 Pin projection = 16.60...16.70 mm FUEL DELIVERY CHARACTERISTICS Difference in start of delivery between max. and min. value = max. 1° angular 1st version Aneroid pressure h: 1100 displacement of cam : 1800 Speed rpm Del.quantity cm3/: 34.0...35.5 1000 s: (33.0...36.5) Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° Spread cm3 : 2.50(19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1.
CHECKING THE IDLE-SPEED AUXILIARY 1000 s: (3.0) Aneroid pressure h: 1100 Speed rpm : 2200 Del.quantity cm3/ : 34.0...36.0 1000 s: (33.0...37.0) SPRING CUTOFF -Control-lever position 49°, max. 0.2 mm control-rod travel deduction cm3 : 2.50 Spread 1000 s: (3.00) allowable after switchover point (of starting cam) up to 1000 1/min. STARTING FUEL DELIVERY Control-lever position 46.5°, control-rod travel deduction must be

greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Note remarks

: MB 2,3 B : 10.11.89 : 28.05.90 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 400 074 905

Injection pump

Pump designation : PES4M55C32ORS167 EP type number : 0 410 054 960

Governor

Governor design. : RSF375/1900M69-1 Governer no. : 0 420 021 102

Customer-spec. information Customer : MB-NFZ

: 0M601-2.3L Engine

1st version kW : 58.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 : (1.95...2.15) Prestroke mm

Rack travel in mm : 20.00...22.00 : 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.80...12.90

Del.guantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 375.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/: 0.5...0.6

100 s: (0.4...0.9)

cm3 : 0.1Spread 100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 40.0...42.0) Spread cm3

: 2.50 : (3.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 50...0
3rd rack travel in: 7,0...7,5
Speed rpm : 2100

4th rack travel in: 2500

: 0.00...1.00 Speed man

SET IDLE CONTROL LEVER POSTTTON

: 1000 Speed rpm Rack travel in mm : 1,4...1,5

LOW IDLE 1

Control lever

position degrees: 11...15 Setting point w/out bumper spring

Spread	Speed rpm : 375 Rack travel in mm : 5.1	+ Speed rpm : 1900 + Del.quantity cm3/: 39.541.5
Del.quantity cm3/ : 37.539.0	Speed rpm: 250 Minimum rack trave: 10.20 Speed rpm: 375 Rack travel in mm: 5.005.20 Rack travel in mm: 3.00 Speed rpm: 450550 Speed rpm: 1000	1000 s: (3.00) Aneroid pressure h: 1100 Speed rpm : 500 * Del.quantity cm3/: 34.536.0 * 1000 s: (33.537.0) * Spread cm3 : 2.50 1000 s: (3.00) Aneroid pressure h: 1100
STARTING FUEL DELIVERY STARTING FUEL DELIVERY Start speed rpm : 1000 Rack travel in m: 12.8012.90 Pel. quantity cm3/ : 52.00.0 Rack travel in m: 12.0012.30 Pel. quantity cm3/ : 52.00.0 Rack travel in m: 12.0012.30 Pel. quantity cm3/ : 52.00.0 Rack travel in m: 12.0012.30 Pel. quantity cm3/ : 52.00.0 Rack travel in m: 12.4012.70** HIGH IDLE Start speed rpm : 800** Rack travel in m: 12.4012.70** HIGH IDLE Start speed rpm : 800** Rack travel in m: 12.4012.70** Aneroid pressure h: 1100 Speed rpm : 20.026.0 Rack travel in mm : 7.007.50 Pel. quantity cm3/ : 22.026.0 Rack travel in mm : 5.005.20 Spread cm3 : 2.50 Cel. quantity cm3/ : 5.06.0 Spread cm3 : 1.00 Spre	Speed rpm : 420 Rack travel in mm : 3,94,1	+ Del.quantity cm3/: 37.539.0 ** + 1000 s: (36.540.0)** + Spread cm3 : 2.50
2nd speed rpm : 1400 Rack travel in m: 12.2012.50 3rd speed rpm : 1900 Rack travel in m: 11.4011.70 4th speed rpm : 500 * Rack travel in m: 12.0012.30 * 5th speed rpm : 800** Rack travel in m: 12.4012.70** Aneroid/Altitude Compensator Test Aneroid/Altitude Compensator Test Setting Speed rpm : 1000 Pressure hPa : 950 Rack travel mm : 0.000.20 Measurement Speed rym : 1000 Pressure hPa : 900 Rack travel in m: 1.802.20 Rack travel in m: 1.802.20 Speed rpm : 375 Rack travel in m: 5.005.20 Del.quantity cm3/ : 506.0 Speed rpm : 375 Rack travel in m: 1.5000.70 Speed rpm : 375 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS Speed rpm : 425 Rack travel in mm : 425 Rack trave	Torque control curve - 1st version 1st speed rpm : 1000	STARTING FUEL DELIVERY
Rack travel in m: 12.0012.30 * 5th speed rpm : 800** Rack travel in m: 12.4012.70** Aneroid/Altitude Compensator Test 1st version Aneroid pressure h: 1100 Speed rpm : 2100 Rack travel in mm: 7.007.50 Del.quantity cm3/ : 22.026.0 1000 s: (21.027. Spread cm3 : 2.50 Spread cm3 : 2.50 Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 Speed rpm : 375 Rack travel in mm: 5.005.20 Del.quantity cm3/ : 5.06.0 1000 s: (4.59.0) Spread cm3 : 1.00 Spread rpm : 375 Rack travel in mm: 5.005.20 Spread cm3 : 1.00 Spread c	2nd speed rpm : 1400 Rack travel in m: 12.2012.50 3rd speed rpm : 1900 Rack travel in m: 11.4011.70	Speed rpm : 100 Del.quantity cm3/: 52.00.0 1000 s: (52.00.0) Rack travel in mm : 20.100.00
Aneroid/Altitude Compensator Test Speed	Rack travel in m: 12.0012.30 * 5th speed rpm : 800**	† 1st version
Spread cm3 : 2.50		+ Speed rpm : 2100 + Rack travel in mm : 7.007.50 + Del.quantity cm3/ : 22.026.0
Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1	Setting Speed rpm : 1000	+ Spread cm3 : 2.50 + 1000 s: (3.00)
2nd pressure hPa : 750 Rack travel in m: 1.802.20 FUEL DELIVERY CHARACTERISTICS Speed rpm : 425 Rack travel in mm : (6,68,2) Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: 39.541.0 1000 s: (38.542.0) Vacuum hPa : 400	Rack travel mm : 0.000.20 Measurement Speed 1/min : 1000 1st pressure hPa : 900	Speed rpm : 375 Rack travel in mm : 5.005.20 Del.quantity cm3/: 5.06.0 1000 s: (4.59.0) Spread cm3 : 1.00
FUEL DELIVERY CHARACTERISTICS Speed rpm : 425 Rack travel in mm : (6,68,2) Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/: - 1000 s: (11,519, Vacuum hPa : 400	2nd pressure hPa : 750	+ SETTING PNUEUMATIC FAST IDLE
1st version	FUEL DELIVERY CHARACTERISTICS	+
Spread CMS: 2.50 + Remarks: 1000 s: (3.0) + : Aneroid pressure h: 1100 +	Aneroid pressure h: 1100 Speed rpm : 1400 Del.quantity cm3/ : 39.541/0 1000 s: (38.542.0) Spread cm3 : 2.50 1000 s: (3.0)	Rack travel in mm : (6,68,2) Del.quantity cm3/: - 1000 s: (11,519,5)

Pin projection = 16.60...16.70 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 375 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

* Setting point for negative torque control - negative retainer behind ** Reference measurement: Control-rod travel and delivery too large - position spiral spring Control-rod travel and delivery too small - position spiral spring upwards

Note remarks

: MB 2,3 C : 28.05.90 Test sheet Edition : 10.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 074 907

Injection pump

Pump designation : PES4M55C32ORS167 : 0 410 054 960 EP type number

Governor

Governor design. : RSF360/2000M70 : 0 420 021 105 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M601-2.3L Engine

1st version kW : 60.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.00...2.10 Prestroke mm : (1.95...2.15) Rack travel in mm : 20.00...22.00

: 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance $+ - ^{\circ} : 0.00 (1.00)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 4.0...4.1

100 s: (3.9...4.2)

cm3 : 0.2Spread

100 s: (0.3)

2nd speed rpm : 335.0 Rack travel in mm : 5.1...5.3 Del.guantity cm3/: 0.5...0.6

100 s: (0.4...0.9) cm3 : 0.1Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000Speed Aneroid pressure h: 1100

Del.quantity : 40.0...41.0

1000 : (39.0...42.0)

cm3 : 2.50 Spread 1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 7,0...7,5 rpm : 2200 Speed

4th rack travel in: 2500

rpm : 0.00...1.00Speed

SET IDLE CONTROL LEVER

POSITION '

Speed : 1000 rpm Rack travel in mm: 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 11...15

Setting point w/out bumper spring

Speed rpm : 335 - Rack travel in mm : 5.2 -	Speed rpm : 2000 Del.quantity cm3/: 39.541.5
rack travet in him : 3.2	1000 s: (38.542.5)
Testing:	Spread cm3 : 2.50
Speed rpm : 250 Minimum rack trave: 7.50	1000 s: (3.00)
Speed rpm: 335 -	Aneroid pressure h: 1100 Speed rpm : 500 *
Rack travel in mm : 5.105.30	<pre>Del.guantity cm3/: 34.536.0 *</pre>
Rack travel in mm : 2.50	1000 s: (33.537.0) *
Speed rpm : 550650 - Speed rpm : 1000 -	Spread cm3 : 2.50
Speed rpm : 1000 - Maximum rack trave: 1.50 -	1000 s: (3.00) Aneroid pressure h: 1100
-	- Speed rpm : 800**
SET IDLE AUXILIARY SPRING -	Del.quantity cm3/: 37.539.0 **
Speed rpm: 400 - Rack travel in mm: 3,94,1 -	1000 s: (36.540.0)** Spread cm3 : 2.50
: (3,84,2)	1000 s: (3.00)
, , , , , , , , , , , , , , , , , , ,	+
TORQUE CONTROL	CTARTING EUEL DELIVERY
Torque control curve - 1st version - 1st speed rpm : 1000 -	STARTING FUEL DELIVERY
Rack travel in m: 12.8012.90	
2nd speed rpm : 1400	Speed rpm : 100
Rack travel in m: 12.2012.50 3rd speed rpm : 2000	Del.quantity cm3/ : 52.00.0 1000 s: (52.00.0)
Rack travel in m: 11.4011.70	Rack travel in mm : 20.100.00
4th speed rpm : 500 *	-
Rack travel in m: 12.0012.30 * 5th speed rpm : 800**	HIGH IDLE
5th speed rpm : 800** - Rack travel in m: 12.4012.70** -	1st version
Had Court Hill In Inc. 12.12.12.12	Aneroid pressure h: 1100
Aneroid/Altitude	Speed rpm : 2200
Compensator Test	Rack travel in mm : 7.007.50 Del.quantity cm3/ : 22.026.0
- -	1000 s: (21.027.0)
1st version -	- Spread cm3 : 2.50
Setting -	1000 s: (3.00)
Speed rpm : 1000 Pressure hPa : 950	LOW IDLE
Rack travel mm : 0.000.20	<u> </u>
<u></u>	Speed rpm : 335 Rack travel in mm : 5.105.30
Measurement - Speed 1/min: 1000 -	- Rack travel in mm : 5.105.50 - Del.quantity cm3/ : 5.06.0
opeca man root	1000 s: (4.59.0)
1st pressure hPa : 900	- Spread cm3 : 1.00
Rack travel in m: 0.500.70 - 2nd pressure hPa : 750	- 1000 s: (1.50)
Rack travel in m: 1.802.20	SETTING/TESTING ELECTRONIC IDLE
-	- REGULATION (ELR)
FUEL DELIVERY CHARACTERISTICS -	
]	- Control lever at idle stop - Speed rpm : 360
1st version	- Rack travel in mm : (12,313,7)
Aneroid pressure h: 1100	- Del.quantity cm3/: - 1000 s: (33,041,0)
Speed rpm: 1400	1000 s: (33,041,0)
Del.quantity cm3/: 39.541.0 1000 s: (38.542.0)	- Current A : 1,8 - Control lever at full-load stop
Spread cm3: 2.50	- Speed rpm : 2500
1000 s: (3.0)	Rack travel in mm : 0,01,0
Aneroid pressure h: 1100	 -

Current

short-duration A: 3.0

Starting test

Speed : 100 rpm

Del.quantity cm3/: -min. 1000 s: 52,0 / 1,8A

Remarks:

Pin projection = 16.60...16.70 mm

Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 15.3°...15.7° (15.2...15.8°) angular displacement of cam following start of delivery of cylinder no. 1.

* Setting point for negative torque control - negative retainer behind ** Reference measurement: Control-rod travel and delivery too large - position spiral spring Control-rod travel and delivery too small - position spiral spring upwards TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 335 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Note remarks

: MB 2,4 V4 Test sheet : 28.05.90 Edition : 06.09.88 Replaces : ISO-4113 Test oil

Combination no. : 0 400 074 924

Injection pump

Pump designation : PES4M55C32ORS104-1 : 0 410 054 963

EP type number

Governor Governor design. : RSF375/2200M12-1

: 0 420 021 064 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M616 -2.4 i -Engine

: 55.0 1st version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 012

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 1.70...1.80 Prestroke mm

: (1.65...1.85) Rack travel in mm : 20.00...0.00 : 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.00 (1.00)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 3.7...3.8

100 s: (3.6...3.9)

cm3 : 0.2Spread

100 s: (0.3)

rpm : 375.02nd speed Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 0.6...0.7

100 s: (0.5...0.9)

cm3 : 0.1 Spread

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

: 37.0...38.0 Del.quantity

1000 : (36.0...39.0)

: 2.50 Spread cm3 : (3.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 6,5...6,9 Speed rpm : 2350

4th rack travel in: 2950

: 0.00...1.00 Speed rom

SET IDLE CONTROL LEVER

POSITION

rpm : 1000 Rack travel in mm : 1,4...1,5

LOW IDLE 1 Control lever

position degrees: 8...12

Setting point w/out bumper spring

: 375 rpm Rack travel in mm: 6.6 Testing: : 250 Screed rpm Minimum rack trave: 10.50 : 375 rpm Rack travel in mm : 6.50...6.70 Rack travel in mm : 2.00 : 750...850 Speed rpm Speed rpm : 1000 Maximum rack trave: 1.50 SET IDLE AUXILIARY SPRING Speed : 450 rpm Rack travel in mm : 5,1...5,3 : (5,0...5,4)

TORQUE CONTROL Torque control curve - 1st version : 1000 1st speed rpm Rack travel in m: 13.40...13.50 rpm : 1600 2nd speed Rack travel in m: 13.00...13.20 3rd speed rpm : 2100 Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1600 Del.quantity cm3/ : 38.5...40.5 1000 s: (37.5...41.5)

cm3 : 2.50Spread

1000 s: (3.0) : 2100 Speed rpm

Del.quantity cm3/: 37.5...39.5 1000 s: (36.5...40.5) Spread cm3: 2.50

1000 s: (3.00)

STARTING FUEL DELIVERY

: 100 rom

Del.quantity cm3/: 52.0...0.0

1000 s: (52.0...0.0)

Rack travel in mm : 20.10...0.00

HIGH IDLE

1st version

: 2350 Speed rpm

Rack travel in mm : 6.50...6.90 Del.quantity cm3/: 13.0...17.0 1000 s: (12.0...19.0)

cm3 : 2.50 Spread

1000 s: (3.00)

LOW IDLE

: 375 Speed rpm

Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 6.0...7.0 1000 s: (5.5...9.0) Spread cm3 : 1.00

1000 s: (1.50)

Remarks:

CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max. 0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-Lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE -Control lever at idle stop. With n = 375 1/min. and pu = 450 mbar, control rod must move quickly to control-rod travel = 0 mm

Note remarks

Test sheet

: KHD 4,1 d 1

Edition Replaces

: 30.05.90 : 21.4.89

Test oil

: ISO-4113

Combination no. : 0 400 864 062

Injection pump

Pump designation : PES4A85D410/3RS2638

EP type number

: 0 410 884 950

Governor

Governor design.

: RSV325...1150A2C707-

2L

Governer no.

: 0 420 232 439

Customer-spec. information

Customer

: KHD

Engine

: BF4L913

1st version kW

: 67.0

Rated speed

: 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 0 681 343 009

Openina

pressure, bar

: 172...175

Test lines

: 1 680 750 014

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 8.1...8.2

100 s: (7.9...8.4)

cm3 : 0.3Spread

100 s: (0.4)

rpm : 325.0 2nd speed Rack travel in mm: 8.1...8.3 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000

Aneroid pressure h: 700

: 81.5...82.5 Del.quantity 1000 : (79.5...84.5) cm3 : 3.00

Spread

1000 : (4.50)

RATED SPEED

1st version

Control lever

position degrees: 88...96

Testing:

1st rack travel in: 11.70

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1110...1140 Speed

A18

3rd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1340 Speed rpm : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 66...74 Setting point w/out bumper spring speed rpm : 325 Rack travel in mm : 7.7 Testing: : 100 Speed rpm Minimum rack trave: 19.50 : 325 Speed rpm Rack travel in mm : 8.10...8.30 Rack travel in mm : 2.00 : 640...700 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 12.70...12.80 nd speed rpm : 500 Rack travel in m: 13.70...13.80 2nd speed rpm : 800 3rd speed Rack travel in m: 13.40...13.60 4th speed rpm : 900 Rack travel in m: 12.90...13.10 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 700 Speed rpm Pressure : 13.70...13.80 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 12.10...12.20 2nd pressure hPa : 450 Rack travel in m: 13.30...13.40 3rd pressure hPa : 290 Rack travel in m: 12.50...12.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

Speed rpm: 800 Del.quantity cm3/: 86.5...88.5

Aneroid pressure h: -

1000 s: (84.0...91.0)

Speed rpm: 500 Del.quantity cm3/: 61.5...63.5 1000 s: (59.5...65.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 105.0...115.0 1000 s: (102.0...118.0) Rack travel in mm: 17.10...17.30

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

APPLICATION

Installation 2300

Note remarks

Test sheet : KHD 6,1 u : 21.05.90 Edition : 1.2.90 Replaces : ISO-4113 Test oil

Combination no. : 0 400 866 152

Injection pump

Pump designation : PES6A85D410/3RS2783

EP type number : 0 410 886 893

Governor

: RSV325...1250A5C2239 Governor design.

: 0 420 232 526 Governer no.

Customer-spec. information Customer : KHD

Engine : F6L912F

1st version kW : 82.0 Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1235 1st speed

Rack travel in mm : 11.80...11.90

Del.guantity cm3/: 6.9...7.0

100 s: (6.7...7.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm: 7.4...7.6 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.2 100 s: (0.4) Spread

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1235 Speed

: 69.5...70.5 Del.quantity 1000 : (67.5...72.5)

: 3.00 cm3 Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 103...111

Testing:

1st rack travel in: 10.80

rpm : 1275...1285 Speed

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

3rd rack travel in: 4.00

Speed rpm : 1345...1375 4th rack travel in: 1510 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 69...77 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm: 5.5 Testina: rpm Speed : 100 Minimum rack trave: 19.50 Speed rpm: 325 Rack travel in mm: 5.90...6.10 Rack travel in mm: 2.00 : 420...480 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1235 Rack travel in m: 11.80...11.90 2nd speed rpm : 750 Rack travel in m: 11.80...12.00 FUEL DELIVERY CHARACTERISTICS 1st version Speed : 750 rpm Del.quantity cm3/: 54.5...56.5 1000 s: (52.0...59.0) rpm : 1000 Speed Del.quantity cm3/: 63.0...65.0 1000 s: (60.5...67.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1275...1285 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 105.0...115.0 1000 s: (102.0...118.0) Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm: 325
Rack travel in mm: 7.40...7.60
Del.quantity cm3/: 8.0...14.0

1000 s: (6.0...16.0)

Spread cm3 : 2.50 1000 s: (4.50)

Remarks:

Note remarks

Test sheet : HAN 10,8 f8 Edition : 17.05.90

Replaces

Test oil : ISO-4113

Combination no. : 0 401 076 010

Injection pump

Pump designation : PE6A100D32ORS3030-1

EP type number : 0 411 006 019

Governor

: RSV350...1100A8C2232 Governor design.

-1R

: 0 420 233 252 Governer no.

Customer-spec. information : HANOMAG Customer

: D964T Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 003 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.80...1.90

: (1.75...1.95) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 5.50...6.50

BASIC SETTING

1st speed rpm: 1080

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 13.9...14.1

100 s: (13.7...14.3)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed

Rack travel in mm: 6.1...6.3 Del.quantity cm3/: 1.1...1.7

100 s: (0.8...1.9)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1080 Speed

Aneroid pressure h: 700

: 139.0...141.0 Del.quantity

1000 : (137.0...143.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 101...109

Testina: 1st rack travel in: 9.70 rpm : 1120...1130 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 3rd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1335 rom : 0.30...1.40 Speed LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.7 Testina: : 100 Speed rpm Minimum rack trave: 19.50 rpm : 350 Speed Rack travel in mm : 6.10...6.30 Rack travel in mm : 2.00 Speed rom : 435...495 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1080 Rack travel in m: 10.70...10.80 and speed rpm : 550 Rack travel in m: 10.70...10.80 2nd speed rpm : 400 5th speed Rack travel in m: 11.90...12.50 Aneroid/Altitude Compensator Test 1st version Setting : 550 Speed rpm Pressure hPa : -: 9.20...9.30 Rack travel mm Measurement 1/min: 550 Speed 1st pressure hPa : 275 Rack travel in m: 9.60...9.80 2nd pressure hPa : 450 Rack travel in m: 10.40...10.50 3rd pressure hPa : 700 Rack travel in m: 10.70...10.80

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: Speed rpm : 550
Del.quantity cm3/: 92.0...94.0
1000 s: (90.0...96.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 9.70 Speed rpm : 1120...1130

STARTING FUEL DELIVERY

Remarks:

Note remarks

: UNI 13,8 f Test sheet Edition : 02.01.90 : 23.6.89 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 891

Injection pump

Pump designation : PE6P120A720RS3216 EP type number : 0 411 826 781

Governor

Governor design. : RQV300...975PA898K

: 0 421 815 197 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8210.42.269 Engine

: 261.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 23.2...23.4

100 s: (22.9...23.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 4.4...4.6 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.60...2.00 travel mm

2nd speed : 400 man travel mm

: 3.20...4.00 : 750 3rd speed rpm

travel mm : 6.70...7.10

: 975 4th speed rpm

: 9.60...9.80 travel mm

5th speed : 1200 rpm

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1015 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975 Aneroid pressure h: 1200 Del.quantity : 232.0...237.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 11.80

rpm : 1015...1025 Speed

2nd rack travel in: 4.00

Speed rpm : 1085...1115 4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 71...79

Testing:

Speed : 100 rpm Minimum rack trave: 6.00 rpm : 300

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 280...400 Speed

TORQUE CONTROL

Dimension a mm : 1.60

Torque control curve - 1st version

rpm : 975 1st speed

Rack travel in m: 12.80...12.90

rpm : 830 2nd speed

Rack travel in m: 12.40...12.60

3rd speed

rd speed rpm : 500
Rack travel in m: 11.30...11.50
th speed rpm : 350
Rack travel in m: 11.20...11.50

4th speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 975 Speed rpm hPa : 1200 Pressure

: 12.80...12.90 Rack travel mm

Measurement

1/min: 975 Speed

1st pressure hPa :-

Rack travel in m: 8.70...9.10

2nd pressure hPa : 700

Rack travel in m: 11.90...12.00

3rd pressure hPa : 290

Rack travel in m: 9.60...10.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 500 Speed rpm

Del.quantity cm3/: 182.0...188.0 1000 s: (179.0...191.0)

Aneroid pressure h: -

rpm : 500 Speed Del.quantity cm3/: 109.0...111.0

1000 s: (106.0...114.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

Note remarks

Test sheet : MAN 11,9a41 : 12.01.90 **Fdition**

Replaces

Test oil : ISO-4113

Combination no. : 0 402 036 080

Injection pump

Pump designation: PES6P120A720/3LS470-

EP type number

: 0 412 026 050

Governor

: RQ300/1100PA813-11 Governor design.

: 0 421 801 514 Governer no.

Customer-spec. information Customer : MAN

: D2866LF Engine

1st version kW : 243.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 6.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm:7501st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.7...4.9

Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1) cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 750 Speed

Aneroid pressure h: 1000

: 202.0...204.0 Del.quantity

1000 : (199.0...207.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed Rack travel in mm: 20.0

Testing:

1st rack travel in: 9.70 Aneroid pressure h: 1000 Speed rpm : 1100 Del.quantity cm3/ : 205.0...209.0 1000 s: (202.0...212.0) rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1185...1215 Aneroid pressure h: 1000 4th rack travel in: 1300 rpm : 0.00...1.00Speed Speed rpm : 650 Del.quantity cm3/: 198.0...204.0 1000 s: (195.0...207.0) LOW IDLE 1 Aneroid pressure h: 280 Setting point w/out bumper spring Speed rpm : 500 Del.quantity cm3/: 184.0...196.0 1000 s: (181.0...199.0) rpm : 300 Rack travel in mm: 4.8 Aneroid pressure h: -Testina: rpm : 500 rpm : 100 Speed Speed Del.quantity cm3/: 132.0...134.0 1000 s: (129.0...137.0) Minimum rack trave: 6.30 : 300 Speed rom Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 : 340...380 BREAKAWAY Speed riom TORQUE CONTROL 1st version Dimension a mm : 0.50 1mm rack travel less than Torque control curve - 1st version rpm : 1100 full load rack tr: 9.70 1st speed Rack travel in m: 10.70...10.90 rpm : 1145...1160 Speed rpm : 750 2nd speed Rack travel in m: 11.90...12.20 STARTING FUEL DELIVERY 3rd speed rpm : 875 Rack travel in m: 11.80...12.00 Speed 4th speed rpm : 950 rpm : 100 Del.quantity cm3/: 225.0...245.0 Rack travel in m: 11.20...11.50 1000 s: (221.0...249.0) Aneroid/Altitude LOW IDLE Compensator Test rpm : 300 Speed Rack travel in mm : 4.70...4.90 1st version Del.quantity cm3/: 12.0...18.0 Settina : 500 1000 s: (9.0...21.0) Speed rpm hPa : 1000 cm3:8.00 Pressure Spread : 11.10...11.20 Rack travel mm 1000 s: (12.00) Remarks: Measurement 1/min: 500 : MAN-NR. 2-7756 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 85 Rack travel in m: 9.30...9.40 3rd pressure hPa : 280 Rack travel in m: 10.50...10.90 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Note remarks

Test sheet : MAN 11,9 s Edition : 12.06.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 036 069

Injection pump

Pump designation : PES6P120A720LS470 EP type number : 0 412 026 046

Governor

Governor design. : RQ250/1050PA767 Governor no. : 0 421 801 311

Customer—spec. information Customer : MAN

Engine : D2866LUE/DSB

1st version kW : 250.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90

: (2.75...2.95)
Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 19.8...20.0

100 s: (19.5...20.3)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 250

Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1)

Spread cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 1000

Del.quantity : 198.0...200.0 1000 : (195.0...203.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50

rpm : 1145...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 Speed rpm⁵ : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 5.3 Testing: Speed : 100 rom Minimum rack trave: 6.80 rpm : 300 Rack travel in mm : 5.20...5.40 Rack travel in mm: 2.00 : 315...355 Speed man TORQUE CONTROL : 0.55 Dimension a mm Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 10.50...10.60 nd speed rpm : 750 2nd speed Rack travel in m: 12.00...12.10 rpm : 865 3rd speed Rack travel in m: 11.60...11.80 4th speed : 985 rpm Rack travel in m: 9.80...10.10 START CUT-OUT 1/min: 190 (210) Speed BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.60 rpm : 1145...1160 *Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 225.0...245.0 1000 s: (221.0...249.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 5.00...5.20 Del.quantity cm3/ : 12.0...18.0 1000 s: (9.0...21.0) cm3 : 8.00Spread

1000 s: (12.00)

Remarks: : APPLICATION Rail car

Note remarks

Test sheet : DEE 7,6 y 1 Edition : 08.06.90 : 2.5.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 722

Injection pump

Pump designation : PES6P120A720RS3203 : 0 412 026 728

EP type number

Governor

Governor design. : RSV400...1100P2A534

: 0 421 833 275 Governer no.

Customer-spec. information : JOHN DEERE Customer

: 6076 HF Engine

: 194.0 1st version kW : 2200 2nd version kW

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm 3,0:

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X3.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm : (3.50...3.70)

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.00...12.10

Del.guantity cm3/: 15.6...15.8

100 s: (15.4...16.1)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.7...2.2 100 s: (1.5...2.5)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1200 Del.quantity: 156.5...158.5 1000 : (154.0...161.0)

: 4.00 cm3

1000 : (6.50)

RATED SPEED

Spread

1st version Control lever

position degrees: 40...48

Testina:

1st rack travel in: 11.00 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1200...1210 4th rack travel in: 1300 rom : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 4.4 Testing: : 100 Speed rpm Minimum rack trave: 19.00 : 400 rpm Rack travel in mm : 4.80...5.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 12.00...12.10 rpm : 750 2nd speed Rack travel in m: 12.80...13.00 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man Pressure hPa : -: 10.30...10.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 605 Rack travel in m: 11.00...11.10 2nd pressure hPa : 780 Rack travel in m: 12.10...12.50 3rd pressure hPa : 1200 Rack travel in m: 12.80...13.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/: 174.5...179.5 1000 s: (172.0...182.0) Aneroid pressure h: -Speed rpm : 800

Del.quantity cm3/: 117.5...121.5 1000 s: (114.5...124.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Remarks:

rpm : 400 Speed

Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 17.5...22.5

1000 s: (15.0...25.0)

cm3 : 6.00Spread 1000 s: (8.00)

: JOHN DEERE # RE32035

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : DEE 7,6 y Edition : 09.07.90 Replaces : 2.5.90 Test oil : ISO-4113

: 0 402 076 723 Combination no.

Injection pump

Pump designation : PES6P120A720RS3203 : 0 412 026 728

EP type number Governor

Governor design. : RSV400...1100P2A534-

: 0 421 833 276 Governer no.

Customer-spec. information Customer : JOHN DEERE

: 6466 AF-050 Engine

: 180.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.55...3.65 Prestroke mm

: (3.50...3.70)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.4)

cm3 : 0.4Spread

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 4.8...5.0

Del.quantity cm3/: 1.7...2.2

100 s: (1.5...2.5)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

Aneroid pressure h: 1200

Del.quantity : 150.0...152.0

1000 : (147.5...154.5) : 4.00

Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testina: 1st rack travel in: 10.80 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 Speed : 1200...1210 rpm 4th rack travel in: 1350 Speed rpm : 0.30...1.40LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/cut bumper spring rpm : 400 Rack travel in mm: 4.4 Testina: : 100 Speed rom Minimum rack trave: 19.00 : 400 Speed rom Rack travel in mm : 4.80...5.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 11.80...11.90 2nd speed rpm : 700 Rack travel in m: 12.60...12.80 Aneroid/Altitude Compensator Test 1st version Settina Speed : 500 rom Pressure hPa : 1200 Rack travel mm : 12.60...12.80 Measurement Speed $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.40...10.60 2nd pressure hPa : 720 Rack travel in m: 11.00...11.10 3rd pressure hPa : 895 Rack travel in m: 11.80...12.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 700

Del.quantity cm3/: 173.5...178.5 1000 s: (171.0...181.0) 1000 s: (117.0...127.0)

BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1145...1155 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm : 20.00...21.00 LOW IDLE Speed rpm : 400 Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0) Spread cm3 : 6.001000 s: (8.00) Remarks: : JOHN DEERE # RE32033 Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer. Starting/full-load transition speed from holding magnet = 450 1/min. Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Speed

Aneroid pressure h: -

rpm : 800

Del.quantity cm3/: 120.0...124.0

Note remarks

Test sheet : DEE 7,7 b
Edition : 17.05.90
Replaces : 2.5.90
Test oil : ISO-4113

Combination no. : 0 402 076 727

Injection pump

Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728

Governor

Governor design. : RSV400...1100P2A534-

Governer no. : 0 421 833 290

Customer-spec. information

Customer : JOHN DEERE

Engine : 6076AF

1st version kW : 168.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65 : (3.50...3.70)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 15.3...15.5

100 s: (15.1...15.7)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION
Control-lever position

Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1100

Aneroid pressure h: 900

Del.quantity : 153.5...155.5 1000 : (151.5...157.5)

cm3 : 4.00

1000 : (6.50)

RATED SPEED

Spread

1st version Control lever

position degrees: 40...48

Testina: 1st rack travel in: 11.00 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1195...1205 Speed 3rd rack travel in: 4.00 : 1195...1225 Speed rpm 4th rack travel in: 1300 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 16...24 Setting point w/out bumper spring rpm : 400 Speed Rack travel in mm: 4.4 Testina: Speed rom : 100 Minimum rack trave: 19.00 rpm : 400 Rack travel in mm : 4.80...5.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 12.00...12.10 rpm : 700 2nd speed Rack travel in m: 13.00...13.20 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 900 Pressure : 13.00...13.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.30...11.50 2nd pressure hPa : 510 Rack travel in m: 11.80...11.90 3rd pressure hPa : 645 Rack travel in m: 12.40...12.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 700 Speed Del.quantity cm3/: 178.5...182.5 1000 s: (176.5...184.5)

Del.quantity cm3/: 138.5...142.5 1000 s: (136.5...144.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 rpm : 1145...1155 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 90.0...110.0 1000 s: (85.0...115.0) Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 400 Speed Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

cm3 : 6.00

Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32034

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Speed

Aneroid pressure h: -

rpm

: 800

Note remarks

: DEE 10,1 i Test sheet : 17.05.90 Edition

: 1.2.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 076 735

Injection pump

Pump designation : PES6P110A720RS3242

: 0 412 016 731 EP type number

Governor

Governor design. : RSV400...1050P0A513-

: 0 421 833 327 Governer no.

Customer—spec. information

: JOHN DEERE Customer

: 6619AE03 Engine

1st version kW : 212.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 200...215

Test nozzle holder

: 1 688 901 103 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasina

: 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.2)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 400.0 2nd speed

Rack travel in mm : 6.8...7.0 Del.quantity cm3/ : 4.0...4.5

100 s: (3.7...4.7)

cm3 : 0.9 Spread

100 s: (1.2)

GUIDE SLEEJE POSITION

Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 800

Del.quantity : 208.0...210.0 1000 : (205.5...212.5)

: 4.00

Spread cm3 1000 : (7.50)

RATED SPEED

1st version

Control lever position degrees: 37...45 Testing: 1st rack travel in: 13.00 rom : 1090...1100 2nd rack travel in: 4.00 rpm : 1160...1170 Speed 3rd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1300 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 17...25 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 6.4 Testing: : 100 Speed rpm Minimum rack trave: 19.00 rpm : 400Rack travel in mm : 6.80...7.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.00...14.20 2nd speed rpm : 600 Rack travel in m: 14.20...14.30 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : 800 Pressure Rack travel mm : 14.20...14.30 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.40...11.60 2nd pressure hPa : 350 Rack travel in m: 13.40...13.50 3rd pressure hPa : 170 Rack travel in m: 12.10...12.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 800

Del.quantity cm3/: 222.0...227.0 1000 s: (219.5...229.5) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 144.5...148.5 1000 s: (141.5...151.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...175.0 1000 s: (140.0...180.0) Rack travel in mm : 20.00...21.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 40.0...45.0 1000 s: (37.5...47.5) cm3 : 9.00Spread 1000 s: (12.00) Remarks: : JOHN DEERE # RE42224 Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Speed

rpm

: 600

Note remarks

: DEE 10,1 j : 17.05.90 : 2.5.90 Test sheet Edition Replaces

Test oil : TSO-4113

Combination no. : 0 402 076 738

Injection pump

Pump designation : PES6P110A720RS3251

EP type number : 0 412 016 733

Governor

: RSV400...1050P0A513-Governor design.

: 0 421 833 327 Governer no.

Customer-spec. information

Customer : JOHN DEERF

: 6619AF03 Engine

: 212.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 200...215

Test nozzle holder

: 1 688 901 103 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,7 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.70...12.80

Del.quantity cm3/ : 19.6...19.8

100 s: (19.4...20.0)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 3.2...3.7 100 s: (3.0...3.9)

cm3 : 0.6Spread

100 s: (0.8)

GUIDE SLEE/E POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed

Aneroid pressure h: 900

: 196.5...198.5 Del.quantity 1000 : (194.5...200.5)

: 4.00 cm5 Spread

1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 40...48

Testina:

1st rack travel in: 11.70

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1160...1170 Speed

3rd rack travel in: 4.00

rpm : 1155...1185 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 4.9

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.30...5.50

TORQUE CONTROL

Torque control curve - 1st version

1st speed

st speed rpm : 1050 Rack travel in m: 12.70...12.80

: 600 2nd speed rom

Rack travel in m: 13.70...13.80

Aneroid/Altitude

Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.70...13.80

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 475

Rack travel in m: 12.70...12.80

3rd pressure hPa : 225

Rack travel in m: 10.80...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 600 Del.quantity cm3/: 236.5...240.5 1000 s: (234.5...242.5)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 144.0...148.0 1000 s: (142.0...150.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...210.0

1000 s: (175.0...215.0)

Rack travel in mm : 20.00...21.00

LOW TDIF

rpm : 400 Speed

Rack travel in mm : 5.30...5.50

Del.quantity cm3/: 32.0...37.0 1000 s: (30.0...39.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE42224

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 14° angular displacement of the cam after start of delivery of cylinder 1 with control-rod travel = 10.50 mm.

Note remarks

Test sheet : BAO 31,8 c3 : 29.05.90 Edition Replaces : 1.2.90 Test oil : ISO-4113

Combination no. : 0 402 630 805

Injection pump

Pump designation : PE12P12OA12ORS7106 : 0 412 620 800 EP type number

Governor

Governor design. : RQV350...900PA935-1

: 0 421 813 820 Governer no.

Customer-spec. information Customer : BAUDOUIN

: V12P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 074

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1- 12- 9- 4- 5- 8-11- 2- 3- 10- 7- 6 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm : 4.6...5.0

Del.guantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm:350

1.30...1.70 travel r.a 2nd speed rpm : 500

: 3.00...3.60 travel mm

3rd speed rpm : 700

travel mm : 5.30...5.90

900 4th speed rpm

7.70...7.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 930 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

339.0...341.0 Del.quantity

1000 : (336.0...344.0)

: 5.00 Spread cm3

: (9.00)1000

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 11.00 Speed rpm : 940...950 2nd rack travel in: 4.00

Speed rpm : 1010...1040

4th rack travel in: 1150 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 86...94

Testing:

Speed rpm : 100 Minimum rack trave: 6.30 Speed rpm : 350

Rack travel in mm : 4.70...4.90

Rack travel in mm: 2.00

CONSTANT REGULATION

Speed rpm : 330...450

START CUT-OUT

Speed 1/min: 270 (290)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 940...950

Remarks:

Note remarks

: FIA 12,9 c Test sheet

Edition : 02.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 636 800

Injection pump

Pump designation: PE6P130A720/3LS7827

EP type number : 0 412 636 814

Governor

Governor design. : RQV400...1150PA937

Governer no. : 0 421 813 823

Customer-spec. information Customer : IVECO-FIAT

: 8262.43.001 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.10...5.20 : (5.05...5.25) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-6-5-4-3-2 Firing order

Phasina : 0-75-120-195-240-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 11.70...11.80

Del.guantity cm3/: 26.8...27.1

100 s: (26.4...27.4)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 400.02nd speed Rack travel in mm: 4.8...5.2

Del.quantity cm3/: 2.1...2.7 100 s: (1.7...3.1)

cm3 : 1.0Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 400 1st speed

2.60...3.00 travel mm 2nd speed : 500 rpm

: 4.20...4.80 travel r.a

3rd speed rpm : 650 : 5.80...6.40 travel mm

: 900 4th speed rpm

travel mm : 6.70...7.00

: 1350 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 850 Rack travel in mm : 16.50...18.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

Aneroid pressure h: 1200

Del.quantity : 268.0...271.0

1000 : (264.5...274.5)

cm3 : 6.00 Spread 1000 : (10.00) RATED SPEED

1st version Control lever position degrees: 106...114

Testina:

1st rack travel in: 10.70 rpm : 1190...1200 Speed 2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 63...71

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 : 300 rpm

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 400...550 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm Pressure

hPa : 1200 mm : 11.70...11.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 650

Rack travel in m: 10.70...10.80

3rd pressure hPa : 250

Rack travel in m: 9.20...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 700 Speed rpm

Del.quantity cm3/: 275.0...282.0

1000 s: (275.0...282.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 165.0...168.0 1000 s: (161.5...171.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.70 rpm : 1190...1200 Speed

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 4.80...5.20 Del.quantity_cm3/: 21.0...27.0

1000 s: (17.0...31.0)

cm3 : 10.00Spread 1000 s: (14.00)

Remarks:

APPLICATION

Special-purpose vehicle

Note remarks

: PER 16,3 b Test sheet : 02.02.90 Edition Replaces : 2.10.89 Test oil : ISO-4113

Combination no. : 0 402 638 803

Injection pump

Pump designation : PE8P120A120RS7141 EP type number : 0 412 628 823

Governor

Governor design. : RQ750PA871 : 0 421 801 404 Governer no.

Customer-spec. information Customer : PERKINS

: CV8-320 G Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60 : (4.45...4.65) Rack travel in mm : 9.00...12.00

: 1- 3- 6- 5- 4- 8-Firing order

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.40...14.50

Del.guantity cm3/: 33.3...33.5

100 s: (33.0...33.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm : 7.5...7.7 Del.quantity cm3/ : 3.6...4.2

100 s: (3.3...4.5)

Spread cm3 : 0.8100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 333.0...335.0 Del.quantity

1000 : (330.0...338.0)

: 5.00 cm3 Spread : (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 77...85

Testina:

1st rack travel in: 13.40 rpm : 750...755 Speed 2nd rack travel in: 4.00 Speed rpm : 795...805 4th rack travel in: 900

: 0.00...1.00 Speed rom

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.40 Speed rpm : 750...755

Remarks:

APPLICATION

Generator

Note remarks

: MB 21,9 x Test sheet : 12.02.90 Edition Replaces : 9.3.87 : ISO-4113 Test oil

Combination no. : 0 402 640 804

Injection pump

Pump designation: PE12P12OA32OLS7807 : 0 412 620 806 EP type number

Governor

: RQV350...1050PA842 Governor design.

: 0 421 813 587 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 444 A Engine

1st version kW : 390.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm:600

Rack travel in mm : 13.50...13.70

Del.guantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.7 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.2)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.10 travel mm

2nd speed : 700 rpm

: 4.00...4.40 travel mm 1100

3rd speed rpm

: 6.80...7.20 travel mm rpm : 1200 4th speed

: 8.30...8.70 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 660 Del.quantity : 199.0201.0 1000 : (196.0204.0) Spread cm3 : 5.00 1000 : (9.00)	1st pressure hPa : 350 Rack travel in m: 11.3011.50 2nd pressure hPa : 500 Rack travel in m: 12.8013.00 3rd pressure hPa : - Rack travel in m: 10.4010.60 START CUT-OUT
RATED SPEED	Speed 1/min: 270 (290)
1st version Control lever position degrees: 5967	FUEL DELIVERY CHARACTERISTICS
Testing: 1st rack travel in: 11.00 Speed rpm : 10901100 2nd rack travel in: 4.00 Speed rpm : 11551185 4th rack travel in: 1300 Speed rpm : 0.001.00 LOW IDLE 1	1st version Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/ : 170.0174.0 1000 s: (167.0177.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1100 Speed rpm : 750
Control lever position degrees: 1018	Del.quantity cm3/: 204.0208.0 1000 s: (201.0211.0) Spread cm3 : 8.00
Testing: Speed rpm : 100 Minimum rack trave: 7.10 Speed rpm : 350 Rack travel in mm : 5.405.60	1000 s: (12.0) Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/: 150.0154.0 1000 s: (147.0157.0) Spread cm3 : 8.00
CONSTANT REGULATION Speed rpm : 400600	Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: - Speed rpm : 500
TORQUE CONTROL Dimension a mm : 1.50 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.0012.20	Del.quantity cm3/: 136.0138.0 1000 s: (133.0141.0) Spread cm3 : 8.00 1000 s: (12.0)
2nd speed rpm : 975 Rack travel in m: 12.6012.80 3rd speed rpm : 875	BREAKAWAY
3rd speed rpm : 875 Rack travel in m: 13.2013.40 4th speed rpm : 700 Rack travel in m: 13.5013.70	1st version 1mm rack travel less than
Aneroid/Altitude Compensator Test	full load rack tr: 11.00 Speed rpm : 10901100
1	STARTING FUEL DELIVERY
1st version Setting Speed rpm : 600 Pressure hPa : 660 Rack travel mm : 13.5013.70	Speed rpm : 100 Del.quantity cm3/ : 220.0240.0 1000 s: (216.0244.0)
Measurement Speed 1/min: 600	LOW IDLE Speed rpm : 350 Rack travel in mm : 5.405.74

Del.quantity cm3/: 16.0...22.0 1000 s: (13.0...22.0) Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

Note remarks

: MB 21,9 v 1 Test sheet : 04.05.90 Edition : 24.8.87 Replaces Test oil : ISO-4113

Combination no. : 0 402 640 806

Injection pump

Pump designation: PE12P120A320LS7806

EP type number : 0 412 620 805

Governor

Governor design. : RQV350...1000PA835-1

: 0 421 813 590 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 444 LA Engine

: 419.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

: 12-1-5-9-8-3-Firing order

4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.30...13.50

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.9...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 100 s: (1.2) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.90...2.10 travel mm

rpm : 700 2nd speed

: 4.90...5.30 travel mm

: 1050 3rd speed rpm

: 8.00...8.40 travel mm

rpm : 1200 4th speed

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 650 1st version : 187.0...189.0 Aneroid pressure h: 650 Del.quantity rpm_ : 1000 **1000** : (184.0...192.0) Speed Del.quantity cm3/: 182.0...186.0 : 5.00 Spread cm3 1000 s: (179.0...189.0) : (9.00) 1000 cm3 : 8.00 Spread 1000 s: (12.0) RATED SPEED Aneroid pressure h: 650 : 900 1st version Speed rpm Del.quantity cm3/: 196.0...200.0 Control lever position degrees: 115...123 1000 s: (193.0...203.0) cm3 : 8.00 Spread 1000 s: (12.0) Testing: 1st rack travel in: 11.70 Aneroid pressure h: rpm : 500 Speed rpm : 1045...1060 Speed Del.quantity cm3/: 125.0...129.0 1000 s: (122.0...132.0) 2nd rack travel in: 4.00 rpm : 1110...1140 Speed cm3 : 8.00 1000 s: (12.0) 4th rack travel in: 1300 Spread Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever BREAKAWAY position degrees: 64...72 1st version Testing: 1mm rack travel less than Speed rpm Minimum rack trave: 7.50 full load rack tr: 11.70 rpm : 350 rpm : 1045...1060 Speed Rack travel in mm : 5.90...6.30 STARTING FUEL DELIVERY CONSTANT REGULATION rpm : 400...600Speed rpm : 100 Speed Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0) Aneroid/Altitude Compensator Test Remarks: 1st version Setting : 600 Speed APPLICATION rpm Pressure hPa : 650 Rack travel mm : 13.30...13.50 Rail car Measurement $1/\min:600$ Speed 1st pressure hPa : 300 Rack travel in m: 11.70...11.90 2nd pressure hPa : 420 Rack travel in m: 12.60...12.80

3rd pressure hPa : 500

Rack travel in m: 10.60...10.90 START CUT-OUT 1/min: 270 (290) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 22,0 b : 02.02.90 Test sheet Edition : 7.7.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 640 812

Injection pump

Pump designation : PE12P12OA520LS7820

: 0 412 620 814 EP type number

Governor

Governor design. : RQV350...1150PA870-4

: 0 421 813 717 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 444 LA Engine

1st version kW : 736.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

(4.35...4.55)

Rack travel in mm : 19.00...21.00 Firing order

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0 Rack travel in mm : 5.0...6.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

: 350 1st speed rpm

1.90...2.40 travel mm

2nd speed : 500 rpm

3.00...3.50 travel mm 800

3rd speed rpm travel mm 4.30...4.80

1200 4th speed rpm

travel mm : 8.30...8.80

: 1250 5th speed rpm

: 9.30...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1275 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1150 Speed

Aneroid pressure h: 1800 Del.quantity

: 312.0...314.0 1000 : (309.0...317.0)

: 6.00 Spread cm3

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testina:

1st rack travel in: 13.30

Speed rpm : 1190...1200 2nd rack travel in: 4.00

rpm : 1270...1300 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 62...70

Testing:

rpm Speed Minimum rack trave: 7.00 : 350 rom

Rack travel in mm : 5.00...5.60

CONSTANT REGULATION

rpm : 350...600 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed mar Pressure hPa : -

Rack travel mm : 7.80...8.10

Measurement

1/min : 500 Speed

1st pressure hPa : 300

Rack travel in m: 9.10...9.20

2nd pressure hPa : 1100

Rack travel in m: 13.40...13.70

START CUT-OUT

Speed 1/min : 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800 Speed : 750 rom

Del.quantity cm3/: 303.0...313.0 1000 s: (300.0...316.0)

cm3 : 10.00Spread 1000 s: (15.0)

Aneroid pressure h: 1800

Speed : 1150 rpm

Del.quantity cm3/: 240.0...243.0 *

1000 s: (237.0...246.0)

cm3 : 10.00Spread 1000 s: (15.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0) Spread cm3: 10.00

1000 s: (15.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

rom : 1190...1200 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 330.0...350.0

1000 s: (326.0...354.0)

Remarks:

* = Set at reduced-delivery stop.

Note remarks

: MAN 21,0 b2 Test sheet : 17.05.90 Edition

Replaces

Test oil : TSO-4113

Combination no. : 0 402 640 815

Injection pump

Pump designation : PE12P12OA520LS7824

EP type number : 0 412 620 816

Governor

: RQV250...1150PA902-4 Governor design.

: 0 421 813 870 Governer no.

Customer-spec. information Customer : MAN

: D2842LYE Engine

: 735.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

· 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening .

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm : (4.45...4.65)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-Firing order 4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 345 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rom: 1150

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 30.1...30.3

100 s: (?9.8...30.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 500 Rack travel in mm : 9.10...9.30 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

cm3 : 0.3Spread

100 s: (1.2) rpm : 300 3rd speed

Rack travel in mm : 7.20...7.40 Del.quantity cm3/ : 5.2...6.0 *

100 s: (-)

cm3:

Spread 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.60

2nd speed : 450 rpm

: 2.90...3.50 travel mm

: 750 3rd speed rpm

5.60...6.00 travel mm

4th speed rpm : 1150

: 9.50...9.70 travel mm

5th speed rpm : 1400

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1200 Rack travel in mm : 15.20...17.80 1/min: 170 (190) Speed FUEL DELIVERY CHARACTERISTICS FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1150 1st version Speed Aneroid pressure h: 1300 Aneroid pressure h: -: 301.0...303.0 rpm : 500 Speed Del.quantity Del.quantity cm3/: 149.0...151.0 1000 : (298.0...306.0) : 5.00 1000 s: (146.0...154.0) cm3 Spread 1000 : (9.00) cm3 : 8.00 Spread 1000 s: (12.0) RATED SPEED BREAKAWAY 1st version Control Lever 1st version position degrees: 118...126 1mm rack travel less than Testina: 1st rack travel in: 12.60 full load rack tr: 12.60 rpm : 1190...1200 Speed rpm : 1190...1200 Speed 2nd rack travel in: 4.00 Speed rpm : 1290...1320 STARTING FUEL DELIVERY 4th rack travel in: 1400 rpm : 0.00...1.00 Speed Speed rpm : 100 Del.quantity cm3/: 100.0...120.0 * LOW IDLE 1 1000 s: (-) Control lever position degrees: 79...87 rpm : 100 Speed Del.quantity cm3/: - ** 1000 s: (-) Testing: : 100 Speed rpm Rack travel in mm: 17.50 Minimum rack trave: 8.90 : 300 rpm Rack travel in mm : 7.30...7.50 HIGH IDLE Rack travel in mm: 2.00 rpm : 430...490 1st version Speed Aneroid pressure h: rpm : 500 Aneroid/Altitude Speed Rack travel in mm : < 7.00 Compensator Test Del.quantity cm3/: - ** 1000 s: (-) 1st version 2nd version Settina : 500 Aneroid pressure h: -Speed rom hPa : 1300 rpm : 500 Speed Pressure Rack travel mm : 13.60...13.70 Rack travel in mm : < 7.50 Del.quantity cm3/: < 50.0 1000 s: (-) Measurement $1/\min : 500$ Speed 3rd version 1st pressure hPa : -Aneroid pressure h: -Rack travel in m: 9.10...9.30 2nd pressure hPa : 100 rpm : 500 Speed Rack travel in mm: 8.50 Rack travel in m: 9.50...9.60 Del.quantity cm3/: 125.0 3rd pressure hPa : 470 1000 s: (-) Rack travel in m: 12.00...12.40 LOW IDLE START CUT-OUT

Speed rpm: 300 Rack travel in mm: 7.20...7.40 Del.quantity cm3/: 52.0...60.0 1000 s: (-)

Remarks:

: MAN-NR. 2-7960

* applies to cylinders 4, 5, 6, 8 ,10 and 12 ** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

Note remarks

Test sheet : MAN 21,0 b1 : 26.06.90 Edition : 7.7.89 Replaces : ISO-4113 Test oil

: 0 402 640 816 Combination no.

Injection pump

Pump designation : PE12P12OA52OLS7824 : 0 412 620 816 EP type number

Governor

: RQV250...1150PA902-3 Governor design.

: 0 421 813 761 Governer no.

Customer-spec. information : MAN Customer

Engine : D2842LXE

: 662.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm : (4.45...4.65)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 345 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 500

Rack travel in mm: 8.90...9.10 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

cm3 : 0.8Spread 100 s: (1.2)

3rd speed rpm : 250 Rack travel in mm : 7.30...7.50

Del.quantity cm3/ : 5.2...6.0 *

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.90...1.10 travel mm

: 450 2nd speed rpm

: 2.90...3.50 : 750 travel mm

3rd speed rpm

: 5.50...5.90 travel mm

4th speed : 1150 rpm

: 9.20...9.40 travel mm

5th speed : 1400 rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1225 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1150 1st version Speed Aneroid pressure h: 1300 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 149.0...151.0 : 249.0...251.0 Del.quantity 1000 : (246.0...254.0) cm3 : 5.00 1000 s: (146.0...154.0) Spread 1000 : (9.00) cm3 : 8.00 Spread 1000 s: (12.0) RATED SPEED 1st version BREAKAWAY Control lever position degrees: 58...66 1st version 1mm rack travel less than Testing: 1st rack travel in: 11.00 Speed rpm : 1190...1200 full load rack tr: 11.00 rpm : 1190...1200 Speed 2nd rack travel in: 4.00 rpm : 1275...1315 STARTING FUEL DELIVERY Speed 4th rack travel in: 1400 rpm : 0.00...1.00 Speed Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 * 1000 s: (-) LOW IDLE 1 Control lever position degrees: 16...24 rpm : 100 Speed Del.quantity cm3/: - ** Testing: rpm : 100 1000 s: (-) Speed Minimum rack trave: 8.90 Rack travel in mm: 17.50 Speed rpm : 250 Rack travel in mm : 7.30...7.50 HIGH IDLE Rack travel in mm : 2.00 rpm : 430...490 1st version Speed Speed rpm : 500** Rack travel in mm : <7.00...0.00 Aneroid/Altitude Del.quant ty cm3/ : <0 1000 s: (-) Compensator Test 1st version 2nd version rpm : 500** Setting Speed Rack travel in mm: <7.50 Del.quantity cm3/: <50.0 1000 s: (-) : 500 Speed rpm hPa : 1300 Pressure : 13.20...13.30 Rack travel mm 3rd version Measurement 1/min: 500 rom : 500 Speed Speed Rack travel in mm: 8.20 Del.quantity cm3/: 125.0 1000 s: (-) 1st pressure hPa : -Rack travel in m: 8.90...9.10 2nd pressure hPa : 100 Rack travel in m: 9.30...9.40 LOW IDLE 3rd pressure hPa : 400 Speed rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 52.0...60.0 * Rack travel in m: 11.30...11.70 START CUT-OUT 1000 s: (-) 1/min: 170 (190) Speed

Remarks:

: MAN-NR. 2-7959

* applies to cylinders 4, 5, 6, 8, 10 and 12 ** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

Note remarks

: MB 22,0 c : 02.02.90 Test sheet Edition : 1.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 640 817

Injection pump

Pump designation : PE12P12OA52OLS7826 EP type number : 0 412 620 817

Governor

Governor design. : RQV350...1150PA870-4

: 0 421 813 717 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 444 LA Engine

: 736.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55) Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-Firing order

4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rom: 1150 1st speed

Rack travel in mm : 15.20...15.30

Del.quantity cm3/: 31.2...31.4

100 s: (30.9...31.7)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 350.0 Rack travel in mm : 5.3...5.9 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.90...2.40 travel mm

rpm : 500 2nd speed

: 3.00...3.50 travel mm

rpm : 800 3rd speed

: 4.30...4.80 travel mm

rpm : 1200 4th speed

: 8.30...8.80 travel mm

rpm : 1250 5th speed

travel mm : 9.30...9.90

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150Aneroid pressure h: 1800 : 312.0...314.0 Del.quantity 1000 : (309.0...317.0) : 6.00 cm3 Spread 1000 : (10.00) RATED SPEED 1st version Control lever position degrees: 113...121 Testing: 1st rack travel in: 14.20 rpm : 1190...1200 2nd rack travel in: 4.00 rpm : 1270...1300 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 62...70 Testina:

: 250 Speed rom Minimum rack trave: 7.30 : 350 man

Rack travel in mm : 5.30...5.90

CONSTANT REGULATION rpm : 350...600 Speed

Aneroid/Altitude Compensator Test

1st version Setting : 500 Speed rom Pressure hPa : -

Rack travel mm : 8.20...8.50

Speed 1/min: 500 1st pressure hPa : 300 Rack travel in m: 9.60...9.70

2nd pressure hPa : 1100 Rack travel in m: 13.80...14.10

START CUT-OUT

Measurement

Speed 1/min: 310 (330)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1800 : 750 Speed rpm

Del.quantity cm3/: 303.0...313.0 1000 s: (300.0...316.0)

cm3 : 10.00

Spread 1000 s: (15.0)

Aneroid pressure h: 1800 Speed : 1150 rpm

Del.quantity cm3/: 240.0...243.0 * 1000 s: (237.0...246.0)

cm3 : 10.00 Spread 1000 s: (15.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 124.0...126.0 1000 s: (121.0...129.0)

Spread cm3 : 10.00 1000 s: (15.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.20 rom : 1190...1200 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 330.0...350.0 1000 s: (326.0...354.0)

Remarks:

* = Set at reduced-delivery stop.

Note remarks

Test sheet : MAN 21.0 e : 01.02.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 818

Injection pump

Pump designation : PE12P12OA520LS7829 EP type number : 0 412 620 821

Governor

Governor design. : RQV250...1150PA943

Governer no. : 0 421 813 850

Customer-spec. information : MAN Customer

Engine : D2842LZE

1st version kW : 809.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm : (4.45...4.65)

Rack travel in mm : 9.00...12.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

Phasina : 0-45-60-105-120-165-

180-225-240-285-300-

: 345 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 1150 1st speed

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 30.4...30.6

100 s: (30.1...30.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 500 2nd speed

Rack travel in mm : 9.10...9.30 Del.quantity cm3/: 14.9...15.1 100 s: (14.6...15.4)

Spread cm3 : 0.8100 s: (1.2)

rpm : 250 3rd speed

Rack travel in mm : 7.30...7.50

Del.quantity cm3/: 5.2...5.6 * 100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.80...1.20 travel mm

: 450 2nd speed rpm

: 2.90...3.50 : 750 travel mm

3rd speed man

: 5.50...5.90 : 1150 travel mm

4th speed rpm

: 9.20...9.40 travel mm

: 1400 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1225 Rack travel in mm : 15.20...17.80

Speed 1/min: 170 (190) FULL LOAD DELTY, AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1150 1st version Aneroid pressure h: 1300 Del.quantity : 304.0...306.0 1000 : (301.0...309.0) Spread cm3 : 5.00 1000 : (9.00) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 s: (146.0...154.0) cm3 : 8.00Spread 1000 s: (12.0) RATED SPEED 1st version BREAKAWAY Control lever position degrees: 117...125 1st version 1mm rack travel less than Testing: 1st rack travel in: 12.80 Speed rpm : 1190...1200 full load rack tr: 12.80 2nd rack travel in: 4.00 rpm : 1190...1200 Speed rpm : 1285...1315 Speed 4th rack travel in: 1400 STARTING FUEL DELIVERY rpm : 0.00...1.00 Speed Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 * LOW IDLE 1 Control Lever 1000 s: (-) position degrees: 78...82 Speed rpm : 100 Del.quantity cm3/: - ** 1000 s: (-) Testing: Speed rpm : 100 Minimum rack trave: 8.90 : 250 Rack travel in mm : 17.50 rom Rack travel in mm : 7.30...7.50 HIGH IDLE CONSTANT REGULATION rpm : 280...410 Speed 1st version Speed rpm : 500 Rack travel in mm : < 7.00 Aneroid/Altitude Del.quantity cm3/: - ** Compensator Test 1000 s: (-) 1st version 2nd version Setting Speed rpm : 500 : 500 Rack travel in mm : < 7.50 Speed rom Del.quantity cm3/: < 50.0 1000 s: (-) hPa : 1300 Pressure : 13.80...13.90 Rack travel mm 3rd version Measurement 1/min: 500 Speed rpm : 500 Speed Rack travel in mm : 8.10...8.30 Del.quantity cm3/: 125.0 1000 s: (-) 1st pressure hPa : -Rack travel in m: 9.10...9.30 2nd pressure hPa : 100 Rack travel in m: 9.50...9.60 LOW IDLE 3rd pressure hPa : 470 Rack travel in m: 12.00...12.40 rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 52.0...60.0 * 1000 s: (-) START CUT-OUT

Remarks:

: MAN-NR. 3-7023

* applies to cylinders 4, 5, 6, 8, 10 and 12 ** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

Note remarks

Test sheet : MAN 21.0 e1 Edition : 17.05.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 818

Injection pump

Pump designation : PE12P120A520L\$7829

: 0 412 620 821 EP type number

Governor

Governor design. : RQV250...1150PA943-1

: 0 421 813 869 Governer no.

Customer-spec. information : MAN Customer

: D2842L7F Engine

: 809.0 1st version kW : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm : (4.45...4.65)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 345 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 30.4...30.6

100 s: (30.1...30.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 500 2nd speed

Rack travel in mm : 9.10...9.30 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

Spread cm3 : 0.8100 s: (1.2)

3rd speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/: 5.2...5.6 *

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.20...1.60 travel mm

: 450 2nd speed rpm

: 2.90...3.50 travel mm

750 3rd speed rpm

: 5.70...6.10 travel mm

1150 4th speed rpm

travel mm 9.50...9.70 : 1400

5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Speed

Degree: -1

rpm : 1225

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1150 Speed Aneroid pressure h: 1300 1st version Del.quantity : 504.0...309.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) cm3 : 5.00 1000 : (9.00) Spread cm3 : 8.00Spread RATED SPEED 1000 s: (12.0) 1st version Control Lever BREAKAWAY position degrees: 118...126 1st version Testina: 1mm rack travel less than 1st rack travel in: 12.80 Speed rpm : 1190...1200 2nd rack travel in: 4.00 full load rack tr: 12.80 rpm : 1190...1200 Speed rpm : 1285...1315 Speed 4th rack travel in: 1400 STARTING FUEL DELIVERY rpm : 0.00...1.00 Speed Speed rpm : 100
Del.quantity cm3/ : 100.0...120.0 *
 1000 s: (-) LOW IDLE 1 Control Lever position degrees: 79...87 rpm : 100 Testing: Speed Del.quantity cm3/: - ** 1000 s: (-) Speed rpm : 100 Minimum rack trave: 8.90 Rack travel in mm: 17.50 rpm Rack travel in mm : 7.30...7.50 HIGH IDLE CONSTANT REGULATION rpm : 280...410 Speed 1st version Speed rpm : 500 Rack trave in mm : < 7.00 Aneroid/Altitude Del.quantity cm3/: - ** Compensator Test 1000 s: (-) 1st version 2nd version Setting Speed rpm : 500 Śpeed : 500 Rack travel in mm : < 7.50 rom Del.quantity cm3/: < 50.0 1000 s: (-) hPa : 1300 Pressure Rack travel mm : 13.80...13.90 Measurement 3rd version 1/min: 500 rpm : 500 Speed Speed Rack travel in mm : 8.10...8.30 Del.quantity cm3/: 125.0 1000 s: (-) 1st pressure hPa :-Rack travel in m: 9.10...9.30 2nd pressure hPa : 100 Rack travel in m: 9.50...9.60 LOW IDLE 3rd pressure hPa : 470 Rack travel in m: 12.00...12.40 rpm : 250 Rack travel in mm : 7.30...7.50 Del.quantity cm3/: 52.0...60.0 * 1000 s: (-) START CUT-OUT

1/min: 170 (190)

Speed

Remarks:

: MAN-NR. 3-7023

* applies to cylinders 4, 5, 6, 8, 10 and 12 ** applies for cylinders 1, 2, 3, 7, 9 and 11

APPLICATION

Ship

Note remarks

Test sheet : MB 21,9 x 2 Edition : 01.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 819

Injection pump

Pump designation : PE12P12OA320LS7807-3

EP type number : 0 412 620 822

Governor

Governor design. : RQV350...1050PA842-6

Governer no. : 0 421 813 853

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 A

1st version kW : 390.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

345

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.50...13.70

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

Spread cm3:0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm: 350

travel mm : 1.90...2.10

2nd speed rpm: 700

travel mm : 4.00...4.40

3rd speed rpm : 1100

travel mm : 6.80...7.20

4th speed rpm: 1200

travel mm : 8.30...8.70

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 660 Del.quantity : 199.0201.0	1st pressure hPa : 350 Rack travel in m: 11.3011.50 2nd pressure hPa : 500 Rack travel in m: 12.8013.00 3rd pressure hPa : 830 Rack travel in m: 13.7013.80 4th pressure hPa : 1150 Rack travel in m: 13.7013.90
RATED SPEED	+ 5th pressure hPa : - Rack travel in m: 10.4010.60
1st version Control lever position degrees: 5967	Speed 1/min : 270 (290)
Testing: 1st rack travel in: 11.30 Speed rom: 10901100 2nd rack travel in: 4.00 Speed rom: 11551185	FUEL DELIVERY CHARACTERISTICS 1st version
4th rack travel in: 1300 Speed rpm : 0.001.00	Aneroid pressure h: 1100 Speed rpm : 1050 Del.quantity cm3/: 170.0174.0
LOW IDLE 1 Control lever position degrees: 1018	1000 s: (167.0177.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1100
Testing: Speed rpm : 100 Minimum rack trave: 7.10 Speed rpm : 350 Rack travel in mm : 5.405.60	Speed rpm : 750 Del.quantity cm3/ : 204.0208.0 1000 s: (201.0211.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1100
CONSTANT REGULATION Speed rpm : 400600	Speed rpm : 1050 Del.quantity cm3/ : 150.0154.0 1000 s: (147.0157.0)
TORQUE CONTROL Dimension a mm : 1.30 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.2012.40 2nd speed rpm : 975 Rack travel in m: 12.6012.80 3rd speed rpm : 875	Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: - Speed rpm : 500 Del.quantity cm3/ : 136.0138.0 1000 s: (133.0141.0) Spread cm3 : 8.00 1000 s: (12.0)
Rack travel in m: 13.2013.40 4th speed rpm : 700 Rack travel in m: 13.5013.70	BREAKAWAY
Aneroid/Altitude Compensator Test	1st version 1mm rack travel less than
1st version Setting Speed rpm : 600 Pressure hPa : 660 Rack travel mm : 13.5013.70	full load rack tr: 11.30 Speed rpm: 10901100 STARTING FUEL DELIVERY
Measurement Speed 1/min: 600	Speed rpm : 100 Del.quantity cm3/ : 220.0240.0 1000 s: (216.0244.0)

Remarks:

:

Note remarks

: MB 22,0 e : 17.05.90 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 820

Injection pump

Pump designation : PE12P120A320LS7814-2

: 0 412 620 824 EP type number

Governor

Governor design. : RQ750PA966 : 0 421 801 535 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

: 535.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm

: (4.75...4.95)
Rack travel in mm : 19.00...21.00

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7 Firing order

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 14.90...15.00

Del.quantity cm3/: 31.6...31.8

100 s: (31.3...32.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 4.6...5.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 316.0...318.0 Del.quantity 1000 : (313.0...321.0)

> : 5.00 cm3

1000 : (9.00)

RATED SPEED

Spread

1st version Control lever

position degrees: 88...96

Testing:

1st rack travel in: 13.90 Speed rpm : 755...760 2nd rack travel in: 4.00 rpm : 780...790

Speed : 0.00...1.00 Speed rpm

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.90 Speed rpm : 755...760 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 260.0...280.0 1000 s: (256.0...284.0)

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : SCA 11,0u11 : 16.02.90 Edition Replaces : 9.3.87 : ISO-4113 Test oil

Combination no. : 0 402 646 819

Injection pump

Pump designation : PE6P120A720RS7001 : 0 412 626 800 EP type number

Governor

Governor design. : RQ200/1100PA713 : 0 421 801 262 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS11 25,26

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 11.70...11.80

Del.quantity cm3/: 16.1...16.3

100 s: (15.8...16.6)

cm3 : 0.5Spread

100 s: (0.8)

rpm : 225.0 2nd speed Rack travel in mm: 4.6...5.2 Del.quantity cm3/: 1.3...1.7

100 s: (-) Spread cm3 : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600

Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 161.0...163.0 1000 : (158.0...166.0)

: 5.00 cm3

: (8.00) 1000

RATED SPEED

Spread

1st version

Setting point:

Rack travel in mm: 16.5

Testing:

1st rack travel in: 10.70

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1290...1320 Speed

4th rack travel in: 1400

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm: 4.5

Testina:

: 100 Speed rpm Minimum rack trave: 5.90 : 225 Speed rom

Rack travel in mm : 4.40...4.60

Rack travel in mm : 2.00

: 300...340 Speed rom

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rom hPa : 900 Pressure

: 11.70...11.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.70

2nd pressure hPa : 220

Rack travel in m: 11.40...11.50 3rd pressure hPa : 190

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 1100 rpm

Del.quantity cm3/: 163.0...171.0

1000 s: (161.0...173.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 120.0...124.0

1000 s: (118.0...126.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.70

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...290.0 1000 s: (-) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 225

Rack travel in mm : 4.40...4.60

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on May 17, 1984

Start of delivery - engine: DS11 25 - 15° before TDC DS11 26 - 11° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Omnibus

Note remarks

Test sheet : SCA 9,0 h
Edition : 16.02.90
Replaces : 9.3.87
Test oil : ISO-4113

Combination no. : 0 402 646 824

Injection pump

Pump designation : PE6P12OA32ORS7111 EP type number : 0 412 626 809

Governor

Governor design. : RQ750PA758 Governer no. : 0 421 801 297

Customer—spec. information
Customer : SAAB—SCANIA

Engine : DS 9 46,47

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

Spread cm3:0.6

100 s: (0.9)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 600

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 177.0...179.0 1000 : (174.0...182.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 16.5

Testing:

1st rack travel in: 11.30
Speed rpm : 750...755
2nd rack travel in: 4.00
Speed rpm : 784...797
4th rack travel in: 850
Speed rpm : 0.00...1.00

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 750...755 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

HIGH IDLE

1st version

Rack travel in mm : 5.80...6.00

cm3 : 4.00Spread

1000 s: (7.00)

Remarks:

ADDITIONAL INFORMATION

Check and set without ROBO diaphragam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania 1987-01-08

Start-of-delivery mark is at 15° angular displacement of the cam after start of delivery at cylinder 1 with control-rod travel 9.00...12.00 mm

Firing sequence of engine: 1-5-3-6-2-4.

APPLICATION

Generator

Generator set

Note remarks

: VOL 16,0 a : 16.02.90 Test sheet Edition Replaces : 10.2.89 : ISO-4113 Test oil

Combination no. : 0 402 646 832

Injection pump

Pump designation : PE6P130A720RS7122 : 0 412 636 804 EP type number

Governor

Governor design. : RQV225...930PA799

: 0 421 813 544 Governer no.

Customer-spec. information : VOLVO Customer

: TD162 FS Engine

: 343.0 1st version kW : 1860 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \circ : 0.30 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.90...13.00

Del.guantity cm3/: 27.4...27.7

100 s: (27.1...28.1)

cm3 : 0.6Spread

100 s: (1.0)

2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 2.5...3.0 100 s: (2.3...3.3)

cm3 : 0.5Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm 350 2.10...2.70 2nd speed rpm

travel mm

: 700 3rd speed rpm

: 6.40...6.60 travel mm rpm : 960 4th speed

: 7.60...7.80 travel mm

rpm : 1045 5th speed : 9.00...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1010 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 700 Del.quantity : 2/4.5...21.0)

cm3 : 6.00 1000 : (10.00)

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testing:

1st rack travel in: 11.90 rpm : 960...972 Speed

2nd rack travel in: 4.00

rpm : 1030...1060 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

: 100 Speed rpm Minimum rack trave: 6.50 : 250 rpm

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 225...400 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm Pressure hPa : 700

Rack travel mm : 12.90...13.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...9.80

2nd pressure hPa : 80

Rack travel in m: 10.00...10.10 3rd pressure hPa : 540

Rack travel in m: 12.50...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 182.5...185.5 1000 s: (179.0...189.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 960...972 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 125.0...145.0 1000 s: (-)

Rack travel in mm : 9.70...9.80

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 25.5...30.5 1000 s: (23.0...33.0)

cm3 : 5.00Spread 1000 s: (8.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : MB 11,0 t : 16.02,90 Edition : 5.8.88 Replaces Test oil : TSO-4113

: 0 402 646 838 Combination no.

Injection pump

Pump designation: PE6P120A320LS7808 : 0 412 626 816

EP type number Governor

Governor design. : RQ300/1050PA762-4

Governer no. : 0 421 801 390

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

: 240.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 5.7...6.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

Del.quantity : 214.0...216.0 1000 : (211.0...219.0)

cm3 : 5.00

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

Speed : 600 rpm Rack travel in mm: 20.0

Testing: 1st rack travel in: 13.70 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm : 1165...1195 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 5.8 Testing: rpm : 200 Speed Minimum rack trave: 7.70 rpm : 300 Rack travel in mm : 5.70...6.00 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm : 0.30 2nd speed rpm : 1050 Rack travel in m: 14.70...14.90 : 800 3rd speed rpm Rack travel in m: 15.10...15.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom hPa : 900 Pressure Rack travel mm : 13.90...14.10 Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550 Rack travel in m: 12.70...12.90 3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 * 4th pressure hPa : 1150 Rack travel in m: 14.40...14.70 5th pressure hPa Rack travel in m: 9.50...9.80 START CUT-OUT 1/min: 220 (240) Speed

1st version Aneroid pressure h: 1350 rpm : 1050 Speed Del.quantity cm3/: 236.0...239.0 1000 s: (233.0...242.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1350 : 800 Speed rpm Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.70 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 205.0...225.0

1000 s: (201.0...229.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 11,0 t 2 : 30.03.90 : 25.3.88 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 843

Injection bumb

Pump designation : PE6P120A320LS7808 EP type number : 0 412 626 816

Governor

: RQV300...1050PA797-2 Governor design.

Governer no. : 0 421 813 614

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

: 240.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 580 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.7...6.0 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

2nd speed rpm : 600

: 4.90...5.10 travel mm

3rd speed rpm : 1075

travel mm : 7.40...7.60

rpm : 1100 4th speed

: 8.00...8.40 travel mm

: 1150 5th speed rpm

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1125

Speed

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 * Speed rpm : 600 4th pressure hPa : 1150 Aneroid pressure h: 900 : 211.0...213.0 Rack travel in m: 14.40...14.60 Del.quantity 1000 : (208.0...216.0) 5th pressure hPa : -: 5.00 Rack travel in m: 9.00...9.30 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 220 (240) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 116...124 Testing: 1st version 1st rack travel in: 13.80 Speed rpm : 1095...1110 Aneroid pressure h: 1450 Speed rpm : 1050 Del.quantity cm3/: 236.0...239.0 2nd rack travel in: 4.00 rpm : 1170...1200 1000 s: (233.0...242.0) Speed 4th rack travel in: 1300 cm3 : 8.00 Spread rpm : 0.00...1.001000 s: (12.) Speed Aneroid pressure h: 1450 : 800 LOW IDLE 1 Speed rpm Del.quantity cm3/: 242.0...246.0 Control lever 1000 s: (239.0...249.0) position degrees: 81...89 Spread cm3 : 8.001000 s: (12.0) Testing: Aneroid pressure h: -Speed rom : 200 Speed rpm : 500 Del.quantity cm3/: 133.0...135.0 Minimum rack trave: 7.90 : 300 rpm 1000 s: (130.0...138.0) Rack travel in mm : 5.70...6.00 cm3 : 8.00Spread CONSTANT REGULATION 1000 s: (12.0) rpm : 300...450 Speed TORQUE CONTROL **BREAKAWAY** : 0.30 Dimension a mm : 1050 2nd speed rpm 1st version Rack travel in m: 14.80...15.00 1mm rack travel less than : 800 3rd speed rpm Rack travel in m: 15.00...15.20 full load rack tr: 13.80 Speed rpm : 1095...1110 4th speed rpm : 700 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test : 100 Speed rpm Del.quantity cm3/: 200.0...220.0 1st version 1000 s: (196.0...224.0) Setting Rack travel in mm : 200.00...220.00 Speed : 600 rpm Pressure hPa : 900 : 13.90...14.10 Rack travel mm Remarks: : Measurement Speed $1/\min : 600$ * Increase in control-rod travel with respect to setting at Least 0.1 mm 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550

Rack travel in m: 12.80...13.10

Note remarks

: SCA 11,1 d : 12.01.90 Test sheet Edition : 10.2.89 Replaces Test oil : TSO-4113

Combination no. : 0 402 646 844

Injection pump

Pump designation: PE6P120A720RS7017 EP type number : 0 412 626 818

Governor

Governor design. : RQV200...1000PA539-7

Governer no. : 0 421 813 631

Customer-spec. information Customer : SAAB-SCANIA

: DSC 11 12 Engine

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

: 0.50 (0.75)Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 5.3...5.7 Del.quantity cm3/: 1.8...2.2

100 s: (-) cm3 : 0.3 Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed : 225 rom

: 1.20...1.60 travel mm

: 350 2nd speed rpm travel ma

: 2.40...3.00 : 650

3rd speed rpm

travel mm : 4.50...5.10

4th speed : 1045 rpm

: 8,40...8.60 travel mm

: 1165 5th speed rpm

: 10.00...10.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 13.50

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1160...1190 4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 62...70

Testing:

: 100 Speed rpm Minimum rack trave: 6.90 rpm : 225

Rack travel in mm : 5.30...5.50 Rack travel in mm : 2.00

rpm : 380...440 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm hPa : 900 Pressure

: 14.50...14.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.70

2nd pressure hPa : 480

Rack travel in m: 14.10...14.20

3rd pressure hPa : 285

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm_ : 1000 Speed

Del.quantity cm3/: 210.0...218.0

1000 s: (208.0...220.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 169.0...173.0 1000 s: (167.0...175.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.50

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 5.30...5.50

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-21

Start of delivery - engine: 16° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

Test sheet : SCA 11,1 c : 12.02.90 Edition : 10.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 845

Injection pump

Pump designation: PE6P120A720RS7139 : 0 412 626 819 EP type number

Governor

Governor design. : RQV200...1000PA725-2

: 0 421 813 632 Governer no.

Customer-spec. information : SAAB-SCANIA Customer

Engine : DSC11 13

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 15.20...15.30

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 225.0 Rack travel in mm: 5.3...5.7 Del.quantity cm3/: 1.8...2.2

100 s: (-)

cm3 : 0.3 Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 1.20...1.60 travel mm : 350 2nd speed

rpm : 2.40...3.00 travel ra

rpm : 650 3rd speed

: 4.40...5.00 travel mm rpm : 1045 4th speed

: 8.40...8.60 travel mm

rpm : 1170 5th speed

: 10.10...10.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700Aneroid pressure h: 900

Del.quantity : 230.0...241.0)

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 14.20 rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 62...70

Testing:

: 100 Speed rpm Minimum rack trave: 6.90 : 225 rpm

Rack travel in mm : 5.30...5.50

Rack travel in mm: 2.00

rpm : 380...440 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom Pressure hPa : 900

: 15.20...15.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 12.30...12.70

2nd pressure hPa : 535

Rack travel in m: 14.60...14.70

3rd pressure hPa : 290

Rack travel in m: 13.10...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 1000 Del.quantity cm3/ : 226.0...234.0

1000 s: (224.0...236.0)

Aneroid pressure h: -

: 500 Speed rom

Del.quantity cm3/: 169.0...173.0 1000 s: (167.0...175.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 5.30...5.50

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-21

Start of delivery - engine: 15° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

D01

Note remarks

Test sheet : SCA 9,0 L : 12.01.90 Edition : 10.2.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 847

Injection pump

Pump designation : PE6P120A320RS7138 : 0 412 626 822 EP type number

Governor

: RQV200...1100PA712-2 Governor design.

: 0 421 813 636 Governer no.

Customer-spec. information Customer : SAAB-SCANIA

: DSC9 02 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm

: (4.35...4.55)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 18.4...18.6

100 s: (18.1...18.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.9...5.3

Del.quantity cm3/: 2.1...2.5 100 s: (-)

cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed rpm : 225

travel mm : 0.90...1.30

2nd speed man travel ma

: 350 : 2.50...3.10 rpm : 650 3rd speed

: 5.40...6.00 travel mm

rpm : 1145 4th speed

: 8.90...9.10 travel mm

: 1290 5th speed rpm

: 10.20...10.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm : 1120 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 184.0...189.0)

cm3 : 6.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 11.90 rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1290...1320 4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 61...69

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 rpm : 225

Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00

: 300...360 Speed LDW.

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed man hPa : 900 Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.30

2nd pressure hPa : 345
Rack travel in m: 12.40...12.50
3rd pressure hPa : 175

Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1100 Speed

Del.quantity cm3/: 179.0...187.0 1000 s: (177.0...189.0)

Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 132.0...136.0 1000 s: (130.0...138.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 270.0...320.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 225

Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring pretoad on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Firing sequence of engine: 1-5-3-6-2-4.

Start of delivery - engine: 15° before

TDC

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : SCA 9,0 L 1 Test sheet Edition : 12.02.90 : 10.2.89 Replaces Test oil : ISO-4113 Combination no. : 0 402 646 848 Injection pump Pump designation: PE6P120A320RS7138 : D 412 626 822 EP type number Governor : RQV200...1100PA712-3 Governor design. : 0 421 813 637 Governer no. Customer-spec. information : SAAB-SCANIA Customer : DS9 05 Engine TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 700 1st speed Rack travel in mm: 12.20...12.30 Del.quantity cm3/: 16.5...16.7 100 s: (16.2...17.0) cm3 : 0.6Spread 100 s: (0.9) rpm : 225.0 2nd speed Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 2.1...2.5 100 s: (-) cm3 : 0.3 Spread 100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 225 : 0.90...1.30 travel mm 2nd speed : 350 rpm travel ma 2.50...3.10 : 650 3rd speed rpm : 5.40...6.00 travel mm : 1145 4th speed rpm : 8.90...9.10 travel mm : 1280 5th speed rpm : 10.10...10.50 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1120 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 900 Del.quantity : 165.0...170.0)

: 1-5-3-6-2-4

Firing order

per values

BEGINNING OF DELIVERY

Prestroke mm

Test pressure, bar: 25...27

Rack travel in mm : 9.00...12.00

: 4.40...4.50 : (4.35...5.55)

: 6.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testina:

1st rack travel in: 11.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1265...1295 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

Speed rpm : 100 Minimum rack trave: 6.50 : 225 rpm

Rack travel in mm : 4.90...5.10

Rack travel in mm: 2.00 Speed rpm: 300...360

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : 900

Rack travel mm : 12.20...12.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...11.00 2nd pressure hPa : 360 Rack travel in m: 11.80...11.90

3rd pressure hPa : 240

Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1100 Speed

Del.quantity cm3/: 160.0...168.0

1000 s: (158.0...170.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 125.0...129.0 1000 s: (123.0...131.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed man : 100

Del.quantity cm3/: 270.0...320.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1988-09-21

Start of delivery - engine: 13° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 9,0 m Test sheet Edition : 12.02.90 Replaces : 17.2.89 Test oil : TSO-4113

Combination no. ÷ 0 402 646 853

Injection pump

Pump designation : PE6P12OA32ORS7138 : 0 412 626 822 EP type number

Governor

Governor design. : RQ200/1100PA873 Governer no. : 0 421 801 415

Customer—spec. information Customer : SAAB-SCANIA

: DS9 05 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...5.55)

Rack travel in mm: 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm : 5.1...5.7 Del.quantity cm3/ : 2.1...2.5

100 s: (-) cm3 : 0.3

Spread 100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 600 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

: 165.0...167.0 Del.quantity 1000 : (162.0...170.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 16.5

Testing:

1st rack travel in: 11.20

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1300...1330 Speed

4th rack travel in: 1400

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rom Rack travel in mm : 5.0

Testina:

rpm : 100 Speed Minimum rack trave: 6.40 rpm : 225

Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00 : 320...360 Speed rom

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 900 Pressure

: 12.20...12.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...11.00

2nd pressure hPa : 360

Rack travel in m: 11.80...11.90 3rd pressure hPa : 240

Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1100 Speed rpm

Del.quantity cm3/: 163.0...171.0 1000 s: (161.0...173.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 125.0...129.0

1000 s: (123.0...131.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20 rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 270.0...320.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 225 Speed rpa

Rack travel in mm : 4.90...5.10

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Omnibus

Note remarks

: SCA 9.0 L 2 : 12.02.90 Test sheet Edition Replaces : 2.6.89 : ISO-4113 Test oil

Combination no. : 0 402 646 860

Injection pump

Pump designation : PE6P120A320RS7138 : 0 412 626 822 EP type number

Governor

Governor design. : RQV350...1100PA795-1

: 0 421 813 693 Governer no.

Customer-spec. information : SAAB-SCANIA Customer

Engine : DS9 52,53,54,55

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.40...4.50 Prestroke mm : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 16.5...16.7

100 s: (16.2...17.0)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 4.7...5.3 Del.quantity cm3/: 2.0...2.4

100 s: (-) cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 : 1.30...1.70 1st speed

travel mm rpm : 650 2nd speed

: 4.10...4.70 travel ma

rpm : 1145 3rd speed : 7.80...8.00 travel mm

: 1255 4th speed rpm

: 8.80...9.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1230 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 165.0...167.0 Del.quantity : (162.0...170.0) 1000

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 99...107

Testina:

1st rack travel in: 11.20

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testina:

rpm : 100 Speed Minimum rack trave: 10.30 : 350 rom

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00 rpm : 370...430 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 1100 Del.quantity cm3/ : 163.0...171.0

1000 s: (161.0...173.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.20

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 270.0...320.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW TDLE

: 350 rpm

Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Scania test specifications taken over on Oct. 17, 1988

Start of delivery - engine: 13° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

Test sheet : SCA 11,1 j : 12.01.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 864

Injection pump

Pump designation : PE6P12OA72ORS70200

EP type number : 0 412 626 831

Governor

Governor design. : RQ200/1000PA713-7

Governer no. : 0 421 801 484

Customer-spec. information Customer : SCANIA

: DSC11 17 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.5...4.9

Del.quantity cm3/ : 1.5...1.9

100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 1.00...1.40 travel mm

: 350 : 2.70...3.30 2nd speed rpm : travel ma

rpm : 650 3rd speed

travel mm : 3.70...4.30 rpm : 1060

4th speed travel mm : 4.20...4.40

5th speed : 1205 rpm

: 6.10...6.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 100

Speed rpm: 600 Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 201.0...206.0)

cm3 : 6.00 Spread 1000 : (9.00) RATED SPEED 1st version Setting point:

Speed rpm Rack travel in mm: 16.5

Testing:

1st rack travel in: 11.80 Speed rpm : 1045...1060 2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1350 rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

: 225 rpm Rack travel in mm: 4.6

Testina:

rpm : 100 Speed Minimum rack trave: 6.10 rpm : 225

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00 Speed rpm : 300...340

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom Pressure hPa : 900

Rack travel mm : 12.80...12.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90 2nd pressure hPa : 440

Rack travel in m: 12.50...12.60 3rd pressure hPa : 250

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/ : 193.0...201.0 1000 s: (191.0...203.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity_cm3/ : 275.0...325.0

1000 s: (-)
Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Start of delivery - engine: 17° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 11,1 i1 Test sheet : 01.02.90 Edition

Replaces

Test oil : ISO-4113

: 0 402 646 865 Combination no.

Injection pump

Pump designation : PE6P12OA72ORS7020

EP type number : D 412 626 828

Governor

Governor design. : RQV200...1000PA539-8

Governer no. : 0 421 813 635

Customer-spec. information : SAAB-SCANIA Customer

: DS11 34 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.8...2.2

100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 225 : 1.20...1.60 travel mm

: 350 2nd speed man : 2.40...3.00 travel ma

3rd speed : 650 rpm

: 4.50...5.10 travel mm

: 1045 4th speed rpm

: 8.40...8.60 travel mm

rpm : 1150 5th speed

9.80...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1050 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

Del.quantity : 200.0...213.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 113...121

Testina:

1st rack travel in: 11.90 rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1135...1165 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

Speed : 100 rpm

Minimum rack trave: 6.20 rpm : 225

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00

: 340...400 Speed rom

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm hPa : 900 Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90 2nd pressure hPa : 520 Rack travel in m: 12.30...12.40

3rd pressure hPa : 320

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 1000 Speed

Del.quantity cm3/: 198.0...206.0 1000 s: (196.0...208.0)

Aneroid pressure h: -

: 500 Speed rom

Del.quantity cm3/: 151.0...155.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 nm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphraam

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Start of delivery - engine: 13° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Omnibus

Note remarks

Test sheet : SCA 11,1 j1 Edition : 01.02.90

Replaces

Test oil : ISO-4113

: 0 402 646 868 Combination no.

Injection pump

Pump designation : PE6P12OA72ORS7020 EP type number : 0 412 626 828

Governor

: RQ200/1000PA713-5 Governor design.

: 0 421 801 444 Governer no.

Customer-spec. information

Customer : SAAB-SCANIA

Engine : DS11 34

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 : (4.95...5.15) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

Spread

cm3 : 0.6

100 s: (0.9)

rpm : 225.0 2nd speed

Rack travel in mm: 4.6...5.0 Del.guantity cm3/: 1.8...2.2

100 s: (-)

Spread cm3 : 0.3

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700Aneroid pressure h: 900

Del.quantity

: 208.0...210.0 1000 : (205.0...213.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 16.5

Testina:

1st rack travel in: 11.90

Speed rpm : 1045...1060

2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 225 Rack travel in mm : 4.7

Testina:

Speed rpm : 100 Minimum rack trave: 6.20 : 225 Speed rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00

Speed : 305...345 rom

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 12.90...13.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 520

Rack travel in m: 12.30...12.40

3rd pressure hPa : 320

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/ : 198.0...206.0 1000 s: (196.0...208.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 151.0...155.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.90

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/ : 275.0...325.0
1000 s: (-)
Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 225 Speed

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Start of delivery - engine: 13° before

Firing sequence of engine: 1-5-3-6-2-4.

Omnibus

Note remarks

Test sheet : SCA 11,1 n : 12.02.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 646 870 Combination no.

Injection pump

Pump designation : PE6P12OA72ORS7170

EP type number

: D 412 626 829

Governor

: RQ750PA758-3 Governor design. : 0 421 801 467 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DS 11 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 700

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

cm3 : 0.6Spread

100 s: (0.9)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 249.0...251.0 Del.quantity : (246.0...254.0) 1000

cm3 : 6.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.50

Speed rpm: 750...755
2nd rack travel in: 4.00
Speed rpm: 784...797
4th rack travel in: 850

rpm : 0.00...1.00Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50

rpm : 750...755 Speed

HIGH IDLE

1st version

Rack travel in mm : 5.80...6.00

cm3 : 4.00Spread

1000 s: (7.00)

Remarks:

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Generator

Generator set

Note remarks

Test sheet : SCA 11,1 m : 05.03.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 646 872 Combination no.

Injection pump

Pump designation : PE6P12OA72ORS7126Z

: 0 412 626 830 EP type number

Governor

: RQV200...1000PA725-6 Governor design.

: 0 421 813 755 Governer no.

Customer-spec, information Customer : SAAB-SCANIA

Engine : DSC11 08

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm 8.0:

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.80...12.90

Del.guantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 1.8...2.2

100 s: (-) cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 225 : 1.20...1.60 travel mm

2nd speed rpm : 350 : 2.40...3.00 travel ma

rpm : 6503rd speed

travel mm : 4.40...5.00 : 1045

4th speed rpm : 8.40...8.60 travel mm

rpm : 1150 5th speed

travel mm : 9.70...10.10

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1170

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900 Del.quantity : 204.0...206.0

1000 : (201.0...209.0)

D18

: 6.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 11.80

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 61...69

Testina:

: 100 Speed rpm Minimum rack trave: 6.30 rpm : 225

Rack travel in mm : 4.70...4.90

Rack travel in mm: 2.00

rpm : 350...410 Speed

Aneroid/Altitude Compensator Test

1st version Settina

Speed

: 500 rpm hPa : 900 Pressure

Rack travel mm : 12.80...12.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.70

2nd pressure hPa : 405

Rack travel in m: 12.30...12.40

3rd pressure hPa : 320

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/: 197.0...205.0

1000 s: (195.0...207.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 142.0...146.0

1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 1040...1050

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125.0...155.0

1000 s: (-)

Rack travel in mm : 10.30...10.70

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO

diaphragm

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on November 14, 1989

Start of delivery - engine: 9° before

TDC

Firing sequence of engine:

1-5-3-6-2-4.

Note remarks

Test sheet : SCA 11,1 l1 Edition : 12.02.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 646 873

Injection pump

Pump designation : PE6P120A720RS7126 EP type number : 0 412 626 815

Governor

Governor design. : RQV350...1050PA795-3

Governer no. : 0 421 813 736

Customer—spec. information
Customer : SAAB—SCANIA

Engine : DS11 54,57

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

Spread cm3: 0.6

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 4.3...4.7

Del.quantity cm3/ : 1.5...1.9

100 s: (-)
Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.20...1.60

2nd speed rpm : 650 travel ra : 4.10...4.70

3rd speed rpm : 1095 travel mm : 7.30...7.50

4th speed rpm: 1240

travel mm : 8.60...9.00

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 1230

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 234.0...236.0 1000 : (231.0...239.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testina:

1st rack travel in: 13.10

rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1225...1255 4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testina:

: 100 Speed rom Minimum rack trave: 10.00 rpm : 350

Rack travel in mm : 4.30...4.50 Rack travel in mm : 2.00

Speed rom : 370...430

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1000 Speed

Del.quantity cm3/: 223.0...231.0 1000 s: (221.0...233.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 1090...1100 Spead

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 350 rpm

Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

: 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order Note remarks Test sheet : 0-60-120-180-240-300 : SCA 11,1 o Phasing Edition : 01.02.90 Tolerance + - ° : 0.50 (0.75) Replaces Test oil : ISO-4113 Time to cyl. no. : 1 Combination no. : 0 402 646 875 BASIC SETTING Injection pump Pump designation : PE6P120A720RS7126Z 1st speed rpm: 700 : 0 412 626 830 EP type number Rack travel in mm : 12.80...12.90 Governor Governor design. : RQ200/1000PA745-1 : 0 421 801 472 Del.quantity cm3/: 20.4...20.6 Governer no. 100 s: (20.1...20.9) Customer-spec. information Customer : SCANIA cm3 : 0.6Spread : DSC 11 08 Engine 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 225.0 2nd speed Rack travel in mm: 4.7...5.1 Test oil inlet temp. °C Del.quantity cm3/: 1.8...2.2 : 38...42 100 s: (-) Overflow valve Spread cm3 : 0.3: 1 417 413 025 100 s: (0.6) GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -1 assembly : 1 688 901 019 rpm : 600 Speed Rack travel in mm : 15.20...17.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate 1st version rpm : 700 diameter mm : 0,8 Speed Aneroid pressure h: 900 : 204.0...206.0 Del.quantity 1000 : (201.0...209.0) Test lines : 1 680 750 015 Spread cm3 : 6.00 Outside diameter 1000 : (9.00) x Wall thickness : 6.00X1.50X600 x Length mm RATED SPEED 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed rpm Rack travel in mm : 16.5

Testing:

Speed

Speed

1st rack travel in: 11.80

2nd rack travel in: 4.00

rpm

rpm : 1045...1060

: 1180...1210

BEGINNING OF DELIVERY
Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 9.00...12.00

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 225 Speed Rack travel in mm : 4.8

Testing:

Speed : 100 rom Minimum rack trave: 6.30 rpm : 225

Rack travel in mm: 4.70...4.90
Rack travel in mm: 2.00
Speed rpm: 310...350

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 900 Pressure

Rack travel mm : 12.80...12.90

Measurement

1/min: 500 Speed

1st pressure hPa :-

Rack travel in m: 10.30...10.70

2nd pressure hPa : 470 Rack travel in m: 12.30...12.40 3rd pressure hPa : 320

Rack travel in m: 11.30...11.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1000

Del.quantity cm3/: 197.0...205.0 1000 s: (195.0...207.0)

Aneroid pressure h: -

rpm_ : 500 Speed

Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.80

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225

Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm. Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Start of delivery - engine: 9° before

Firing sequence of engine: 1-5-3-6-2-4.

Omnibus

Note remarks

: SCA 11,1 i4 : 16.02.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 878

Injection pump

Pump designation : PE6P120A720RS7020 EP type number : 0 412 626 828

Governor

Governor design. : RQV200...1000PA539-1

: 0 421 813 813 Governer no.

Customer-spec. information Customer : SCANIA

: DS11 34 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm : 700 1st speed

Rack travel in mm : 12.90...13.00

Del.guantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.8...2.2

100 s: (-) cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 225 : 1.20...1.60 travel mm

rpm : 350 2nd speed : 2.40...3.00 travel mm

rpm : 650 3rd speed

: 4.50...5.10 travel mm

rpm : 1045 4th speed

: 8.40...8.60 travel mm

5th speed rpm : 1150

: 9.80...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1050

Speed Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 208.0...210.0

1000 : (205.0...213.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 11.90

Speed rpm : 1040...1050

2nd rack travel in: 4.00

rpm : 1135...1165 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

: 100 Speed rpm Minimum rack trave: 6.20 Speed : 225 rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

Speed rpm : 340...400

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 900 Pressure

: 12.90...13.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 520

Rack travel in m: 12.30...12.40 3rd pressure hPa : 320 Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 1000 Del.quantity cm3/ : 198.0...206.0 1000 s: (196.0...208.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 151.0...155.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...325.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 225 Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Omnibus

Note remarks

: VOL 16,0 c Test sheet : 16.02.90 Edition Replaces : 15.8.89 : ISO-4113 Test oil

Combination no. : 0 402 646 883

Injection pump

Pump designation : PE6P13DA72ORS7122-2

: 0 412 636 813 EP type number

Governor

Governor design. : RQV225...930PA922

: 0 421 813 763 Governer no.

Customer-spec. information

Customer : VOLVO-TRUCK

Engine : TD162 FL,

: 357.0 1st version kW : 1860 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.30 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm:7001st speed

Rack travel in mm : 13.30...13.40

Del.quantity cm3/: 28.8...29.1

100 s: (28.5...29.5)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 250.0 2nd speed Rack travel in mm: 5.0...5.2

Del.quantity cm3/: 2.5...3.0 100 s: (2.3...3.3) Spread cm3: 0.5

100 s: (0.8)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed : 1.00...1.40 travel mm

350 2nd speed rpm :

2.10...2.70 travel mm

: 700 3rd speed rpm

travel mm : 5.60...6.20

4th speed rpm : 975

travel mm : 8.20...8.40

5th speed : 1090 rpm

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1100

Speed

Rack travel in mm : 7.70...10.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 700 Del.quantity : 288.5...291.5 1000 : (285.0...295.0)

Spread cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.30 rpm : 970...980 Speed

2nd rack travel in: 4.00

rpm : 1075...1105 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testina:

Speed rpm : 100 Minimum rack trave: 6.50 rom

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 225...450 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 700 Pressure

Rack travel mm : 13.30...13.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...9.90

2nd pressure hPa : 80

Rack travel in m: 10.00...10.10

3rd pressure hPa : 610

Rack travel in m: 12.90...13.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -: 700 Speed rpm

Del.quantity cm3/: 182.0...185.0 1000 s: (178.5...188.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.30 rpm : 970...980 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 125.0...145.0 1000 s: (121.0...149.0)

Rack travel in mm : 9.70...9.90

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.00...5.20 Del.quantity cm3/: 25.5...30.5 1000 s: (23.0...33.0)

cm3 : 5.00 1000 s: (8.00) Spread

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : SCA 11,1 L : 12.01.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 646 885 Combination no.

Injection pump

Pump designation : PE6P120A720RS7126 EP type number : 0 412 626 815

Governor

: RQV350...1050PA795-9 Governor design.

: 0 421 813 769 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS11 54,57

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 4.3...4.7 Del.guantity cm3/: 1.5...1.9

100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

travel mm : 1.20...1.60

2nd speed : 650 rpm : 4.10...4.70 travel ma

: 1095 3rd speed rpm

: 7.30...7.50 travel mm

rpm : 1240 4th speed

travel mm : 8.60...9.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1230 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

: 234.0...236.0 Del.quantity 1000 : (231.0...239.0)

: 6.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control Lever

position degrees: 98...106

Testina:

1st rack travel in: 13.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

rpm : 100 Speed Minimum rack trave: 10.00 : 350 rpm

Rack travel in mm : 4.30...4.50

Rack travel in mm: 2.00 : 370...430 Speed rom

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rom hPa : 900 Pressure

Rack travel mm : 14.10...14.20

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 510

Rack travel in m: 13.00...13.10

3rd pressure hPa : 250

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 Speed rpm : 1000 Del.quantity cm3/: 223.0...231.0

1000 s: (221.0...233.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 350 rom

Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. iith letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Start of delivery - engine: 16° before TDC

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

: SCA 11,1 n1 Test sheet

: 23.03.90 Edition

Replaces

: ISO-4113 Test oil

: 0 402 646 886 Combination no.

Injection pump

Pump designation : PE6P120A720RS7170

EP type number : 0 412 626 829

Governor

Governor design. : RQ750PA758-8 : 0 421 801 491 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS 11

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 24.9...25.1

100 s: (24.6...25.4)

cm3 : 0.7Spread

100 s: (1.0)

rpm : 500.0 2nd speed

Rack travel in mm : 9.7...10.1 Del.quantity cm3/ : 15.0...15.4

100 s: (14.8...15.6)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

: 249.0...251.0 Del.quantity 1000 : (246.0...254.0) cm3 : 7.00

Spread

1000 : (10.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.50 rpm : 750...755 Speed 2nd rack travel in: 4.00

Speed rpm : 784...797 4th rack travel in: 850

rpm : 0.00...1.00Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rpm hPa : 900 Pressure

: 12.50...12.60 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 9.70...10.10

2nd pressure hPa : 575
Rack travel in m: 12.00...12.10
3rd pressure hPa : 370

Rack travel in m: 10.70...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 150.0...154.0 1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 90.0...130.0 1000 s: (-)

Rack travel in mm : 9.70...10.10

HIGH IDLE

1st version

Aneroid pressure h: 900

Rack travel in mm : 5.80...6.00

Spread

cm3 : 4.00

1000 s: (7.00)

Remarks:

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO

diaphragm.

For comb. with letter index see

VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on 1990-01-11

Start of delivery - engine: 16° before

Firing sequence of engine:

1-5-3-6-2-4.

APPLICATION

Generator

Generator set

E03

: 5.20...5.30 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (5.15...5.35) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : DAF 11,7 j : 06.04.90 Test sheet Edition Replaces : ISO-4113 Phasing : 0-60-120-180-240-300 Test oil Combination no. : D 402 646 893 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS7202 : 0 412 626 835 EP type number BASIC SETTING Governor rpm: 850 Governor design. : RQ250/1000PA936 1st speed : 0 421 801 507 Governer no. Rack travel in mm : 11.90...12.00 Customer-spec. information Del.quantity cm3/: 21.7...21.9 Customer : DAF 100 s: (21.4...22.2) : WS 268 Engine : 268.0 cm3 : 0.51st version kW Spread : 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Rack travel in mm: 4.9...5.3 Test oil Del.quantity cm3/: 2.3...2.9 inlet temp. °C : 38...42 100 s: (2.0...3.2) cm3 : 0.8Overflow valve Spread 100 s: (1.2) : 1 417 413 025 GUIDE SLEEVE POSITION Inlet press., bar: 1.50 Control-lever position Test nozzle holder Degree: -1 : 1 688 901 019 rpm : 550 assembly Rack trave! in mm : 15.20...16.40 Opening | : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP pressure, bar Orifice plate 1st version rpm : 850 diameter mm : 0,8 Speed Aneroid pressure h: 1000 Del.quantity : 217.0...222.0) Test Lines : 1 680 750 075 : 5.00 1000 : (9.00) Outside diameter x Wall thickness RATED SPEED : 8.00x2.50x1000 x Length mm 1st version (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Setting point:
Speed rpm : 550
Rack travel in mm : 15.8
Testing:
1st rack travel in: 10.90

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

rpm : 1035...1050 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1250 rpm : 0.00...1.40 Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 5.1 Testing: Speed : 100 rpm Minimum rack trave: 6.60 : 250 rpm Rack travel in mm : 5.00...5.20 Rack travel in mm: 2.00 Speed rpm: 310...350 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 12.10...12.20 2nd speed rpm : 1000 Rack travel in m: 12.00...12.20 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1000 Pressure : 11.90...12.00 Rack travel mm Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 360 Rack travel in m: 11.10...11.20

3rd pressure hPa : 220

Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 153.0...155.0 1000 s: (150.0...158.0) **BREAKAWAY**

1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250

Rack travel in mm : 4.90...5.30 Del.quantity cm3/ : 23.0...29.0

1000 s: (20.0...32.0) cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

:

E05

1st version

Note remarks

: DAF 11,7 k1 : 12.04.90 Test sheet Edition Replaces : 5.1.90 : ISO-4113 Test oil

: 0 402 646 894 Combination no.

Injection pump

Pump designation : PE6P120A320RS7194 : D 412 626 834 EP type number

Governor

Governor design. : RQ250/1000PA936-1

: 0 421 801 508 Governer no.

Customer-spec. information Customer : DAF

: WS 295 Engine

: 295.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in nm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.5...24.7

100 s: (24.2...25.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.02nd speed

Rack travel in mm : 7.6...8.D Del.quantity cm3/ : 1.4...2.D

100 s: (1.1...2.3)

Spread cm3 : 0.8100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 550

Rack trave' in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1000

Del.quantity : 245.0...247.0 1000 : (242.0...250.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed man Rack travel in mm : 15.8

Testing:

1st rack travel in: 12.70

rpm : 1035...1050 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1250 rpm : 0.00...1.40Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 250 Speed Rack travel in mm: 6.7 Testina: : 100 Speed rom Minimum rack trave: 8.20 Speed rpm : 250 Rack travel in mm : 6.60...6.80 Rack travel in mm : 2.00 Speed rpm : 345...385 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 850 Rack travel in m: 14.00...14.10 2nd speed rpm : 1000 Rack travel in m: 13.90...14.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure : 13.70...13.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 460 Rack travel in m: 13.00...13.10 3rd pressure hPa : 310 Rack travel in m: 12.00...12.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 171.0...173.0 1000 s: (168.0...176.0) **BREAKAWAY**

1mm rack travel less than

full load rack tr: 12.70

rpm : 1035...1050 Speed

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...6.80

Remarks:

E07

1st version

Note remarks

Test sheet : DAF 11,7 i2 : 06.07.90 Edition : 12.1.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 646 895

Injection pump

Pump designation : PE6P12OA32ORS72O2 EP type number : 0 412 626 835

Governor

Governor design. : RQV250...1000PA939

: 0 421 813 829 Governer no.

Customer-spec. information Customer : DAF

Engine : WS 268

: 268.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 D25

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 20.8...21.0

100 s: (20.5...21.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm: 4.9...5.3 Del.quantity cm3/: 2.1...2.7

100 s: (1.8...3.0)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 0.70...1.10 travel mm

rpm : 400 2nd speed : 2.40...3.20 travel mm

rpm : 800 3rd speed

: 5,20...5.60 travel mm

: 1000 4th speed rpm

: 7.30...7.50 rpm : 1300 travel mm

5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000

: 208.5...210.5 Del.quantity 1000 : (205.5...213.5) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 113...121 Testina: 1st rack travel in: 10.90 rpm : 1030...1040 Speed 2nd rack travel in: 4.00 Speed rpm: 1120...1150 4th rack travel in: 1300 rpm : 0.00...1.40 Speed LOW IDLE 1 Control lever position degrees: 74...82 Testing: : 100 Speed rom Minimum rack trave: 6.60 rpm : 250 Speed Rack travel in mm : 5.00...5.20 CONSTANT REGULATION rpm : 270...380 Speed Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 11.90...12.00 Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 9.40...9.60 2nd pressure hPa : 360 Rack travel in m: 11.10...11.20 3rd pressure hPa : 220 Rack travel in m: 10.10...10.30 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 145.5...147.5 1000 s: (142.5...150.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.90 rpm : 1030...1040 Speed

LOW IDLE

: 250 Speed rpm Rack travel in mm : 4.90...5.30

Del.quantity cm3/: 21.0...27.0 1000 s: (18.0...30.0) Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

1st version

Aneroid pressure h: -

rpm

: 600

Note remarks

Test sheet : DAF 11,7 k4 Edition : 17.05.90

Replaces

Test oil : ISO-4113

: 0 402 646 896 Combination no.

Injection pump

Pump designation : PE6P120A320RS7194 EP type number : 0 412 626 834

Governor

Governor design. : RQV250...1000PA939

: D 421 813 829 Governer no.

Customer-spec. information Customer : DAF

: WS 295 Engine

1st version kW : 295.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter nm : 0,8

: 1 680 750 075 Test Lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.25)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.5...24.7

100 s: (24.2...25.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 7.6...8.0 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.70...1.10 travel mm

rpm : 400 2nd speed

travel mm : 2.40...3.20

: 800 3rd speed rom

: 5.20...5.60 : 1000 travel mm

4th speed rpm

: 7.30...7.50 travel mm

rpm : 1300 5th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000 Del.quantity : 245.0...247.0 1000 : (242.0...250.0)

cm3 : 5.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testing:

1st rack travel in: 12.70 Speed rpm : 1025...1040

2nd rack travel in: 4.00

Speed rpm : 1130...1160

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 78...86

Testina:

Speed : 100 rpm Minimum rack trave: 8.20 rpm : 250 Speed

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 275...385 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rom hPa : 1000 Pressure

Rack travel mm : 13.70...13.80

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 460

Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

START CUT-OUT

1/min: 200 (220) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

E11

Aneroid pressure h: rpm : 600 Speed

Del.quantity cm3/: 171.0...173.0

1000 s: (168.0...176.0)

BREAKAWAY

1st version

1mm rack travel less than

full Load rack tr: 12.70

rpm : 1025...1040 Speed

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 6.60...6.80

Remarks:

:

Note remarks

: DAF 11,7 k5 Test sheet Edition : 16.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 896

Injection pump

Pump designation : PE6P120A320RS7194 : 0 412 626 834 EP type number

Governor

Governor design. : RQV250...1000PA939-1

Governer no. : 0 421 813 830

Customer-spec. information Customer : DAF

Engine : WS 295

: 295.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.25)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 24.5...24.7

100 s: (24.2...25.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 7.6...8.0

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 0.70...1.10 travel mm

2nd speed rpm : 400

: 2.40...3.20 travel mm

3rd speed rpm : 800

: 5.20...5.60 : 1000 travel mm

4th speed rpm : 7.30...7.50 travel mm

: 1300

5th speed rpm : 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 1000 Del.quantity : 245.0...247.0 1000 : (242.0...250.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 115...123

Testina:

1st rack travel in: 12.70

Speed rpm : 1025...1040

2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW IDLE 1 Control lever

position degrees: 78...86

Testing:

: 100 Speed rpm Minimum rack trave: 8.20 : 250 rom

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 275...385 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

: 13.70...13.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 460

Rack travel in m: 13.00...13.10

3rd pressure hPa : 310

Rack travel in m: 12.00...12.20

START CUT-OUT

1/min: 200 (220) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 171.0...173.0

1000 s: (168.0...176.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 1025...1040 Speed

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.60...6.80

Remarks:

E13

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DAF 11,7 k3 : 02.02.90 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 646 896 Injection pump Pump designation : PE6P120A320RS7194 : 0 412 626 834 EP type number Governor Governor design. : RQV275...1000PA939-1 : D 421 813 830 Governer no. Customer-spec. information Customer : DAF Engine : WS 295 : 295.0 1st version kW : 2000 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 075 Outside diameter x Wall thickness

: (5.15...5.25) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING rpm: 850 1st speed Rack travel in mm : 13.70...13.80 Del.quantity cm3/: 24.5...24.7 100 s: (24.2...25.0) Spread cm3 : 0.5100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 7.6...8.0 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3) cm3 : 0.8 Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 0.70...1.10 2nd speed rpm : 400 2.40...3.20 travel mm 800 3rd speed rpm 5.20...5.60 travel mm : 1000 4th speed rpm : 7.30...7.50 travel mm : 1300 5th speed rpm : 11.00...12.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1060 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 850 Speed Aneroid pressure h: 1000

: 5.20...5.30

Prestroke mm

x Length mm

Test pressure, bar: 25...27

per values

BEGINNING OF DELIVERY

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

: 8.00x2.50x1000

Del.quantity : 245.0...247.0 1000 : (242.0...250.0) Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testina:

1st rack travel in: 12.70

Speed rpm: 1025...1040 2nd rack travel in: 4.00

rpm : 1130...1160 Speed

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 78...86

Testing:

: 100 Speed rpm Minimum rack trave: 8.20 rpm : 250 Speed

Rack travel in mm : 6.60...6.80

CONSTANT REGULATION

rpm : 275...385 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 600 Speed rpm hPa : 1000 Pressure

: 13.70...13.80 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 460

Rack travel in m: 13.00...13.10

3rd pressure hPa : 310

Rack travel in m: 12.00...12.20

START CUT-OUT

1/min : 200 (220) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 171.0...173.0 1000 s: (168.0...176.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1025...1040

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 6.60...6.80

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : MB 11,0 t 5 Edition : 23.03.90

Replaces

Test oil : ISO-4113

: 0 402 646 901 Combination no.

Injection pump

Pump designation : PE6P120A320LS7808 : 0 412 626 816 EP type number

Governor

Governor design. : RQV300..950PA797-12

: 0 421 813 840 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

: 249.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,8 diameter mm

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.50...13.70

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 5.7...6.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm 1.10...1.40 620

2nd speed rpm

: 5.00...5.40 : 780 travel mm

3rd speed rom

6.00...6.50 travel mm

: 1010 4th speed rpm

travel mm : 8,30...8.80

5th speed : 1100 rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1040

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version 5th pressure hPa : rpm : 600 Rack travel in m: 8.90...9.20 Speed Aneroid pressure h: 900 : 207.0...209.0 START CUT-OUT Del.quantity 1000 : (204.0...212.0) : 5.00 1/min: 220 (240) Spread cm3Speed 1000 : (9.00) FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version 1st version Aneroid pressure h: 1350 Control Lever position degrees: 117...125 Speed : 950 rpm Del.quantity cm3/: 238.0...240.0 1000 s: (235.0...243.0) Testina: cm3 : 8.00 1st rack travel in: 13.60 Spread rpm : 990...1000 1000 s: (12.0) Aneroid pressure h: 1350 2nd rack travel in: 4.00 rpm : 1065...1095 Speed Speed rpm : 800 Del.quantity cm3/: 236.0...239.0 1000 s: (233.0...242.0) 4th rack travel in: 1200 rpm : 0.00...1.00Speed cm3 : 8.00 Spread LOW IDLE 1 1000 s: (12.0) Aneroid pressure h: -Control lever : 500 position degrees: 80...88 Speed rom Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) Testina: : 200 cm3 : 8.00 Speed Spread rpm Minimum rack trave: 7.70 1000 s: (12.0) : 300 man Rack travel in mm : 5.70...6.00 BREAKAVAY CONSTANT REGULATION rpm : 300...500 1st version Speed 1mm rack travel less than TORQUE CONTROL Rack travel in m: 14.60...14.80 full load rack tr: 13.60 Rack travel in m: 14.60...14.80 rpm : 990...1000 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/: 205.0...225.0 1st version 1000 s: (201.0...229.0) Settina : 600 Speed rpm hPa : 900 Remarks: Pressure Rack travel mm : 13.50...13.70 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.60...10.80 2nd pressure hPa : 550 Rack travel in m: 12.70...13.00 3rd pressure hPa : 1150 Rack travel in m: 13.80...14.00 4th pressure hPa : 1250 Rack travel in m: 14.30...14.50

Note remarks

Test sheet : FIA 13,8 w Edition : 06.07.90

Replaces

Test oil : TSO-4113

: 0 402 646 902 Combination no.

Injection pump

Pump designation: PE6P130A720RS7197

: 0 412 636 815 EP type number

Governor

: RQV300...900PA946 Governor design.

: 0 421 813 845 Governer no.

Customer-spec. information : IVECO-FIAT Customer

: 8210.42.151 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 25.5...25.8

100 s: (25.1...26.1)

cm3 : 0.6Spread

100 s: (1.0)

2nd speed rpm : 300.0 Rack travel in mm : 5.1...5.5

Del.quantity cm3/: 1.9...2.5

100 s: (1.5...2.9)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.40 travel mm

2nd speed : 450 rpm

: 2.80...3.40 travel ma

: 700 3rd speed rpm

5.50...5.90 travel mm

: 900 4th speed rpm

: 7.70...7.90 travel mm

: 1200 5th speed rom

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 935 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 255.0...261.5)

cm3 : 6.00Spread

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 118...126

Testing:

1st rack travel in: 12.50 rpm : 940...950 Speed

2nd rack travel in: 4.00

Speed rpm : 1020...1050 4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 76...84

Testing:

: 100 Speed rpm Minimum rack trave: 6.80 rpm : 300

Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 320...440 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.40...13.50

Measurement

1/min: 500 Speed

1st pressure hPa : Rack travel in m: 10.50...10.70

2nd pressure hPa : 345

Rack travel in m: 12.70...12.80

3rd pressure hPa : 275

Rack travel in m: 11.10...11.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 181.0...184.0

1000 s: (177.5...187.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50 rpm : 940...950

INTERMEDIATE RATED SPEED Rack travel in mm: 4.00

STARTING FUEL DELIVERY

: 100 Speed rom

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 5.10...5.50 Del.quantity cm3/: 19.0...25.0 1000 s: (15.0...29.0)

cm3 : 10.00 1000 s: (14.00) Spread

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

Test sheet : SCA 11,1 b2 Edition : 30.03.90

Replaces Test oil : ISO-4113

: 0 402 646 905 Combination no.

Injection pump

Pump designation : PE6P12OA72ORS7126 EP type number : 0 412 626 815

Governor

Governor design. : RQV200...1000PA725-6

Governer no. : 0 421 813 755

Customer-spec. information Customer : SCANIA

: DSC11 10 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 23.2...23.4

100 s: (22.9...23.7)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 225.0 2nd speed Rack travel in mm: 4.7...5.1 Del.quantity cm3/: 1.8...2.2

100 s: (-) cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 225 1st speed

: 1.20...1.60 travel mm

: 350 2nd speed rpm : 2.40...3.00 travel m

rpm : 650 3rd speed : 4.40...5.00

travel mm rpm : 1045 4th speed

: 8.40...8.60 travel mm

rpm : 1150 5th speed

: 9.70...10.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm : 6.00...12.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 232.0...237.0)

cm3 : 6.00 1000 : (9.00) Spread

RATED SPEED

1st version Control lever

position degrees: 113...121

Testina:

1st rack travel in: 12.90

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 61...69

Testina:

Speed rpm : 100 Minimum rack trave: 6.30

rpm : 225 Rack travel in mm : 4.70...4.90

Rack travel in mm: 2.00 rpm : 350...410 Speed

Aneroid/Altitude Compensator Test

1st version Settina

: 500 beed rom hPa : 900 Pressure

: 13.90...14.00 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.70

2nd pressure hPa : 555

Rack travel in m: 12.90...13.00 3rd pressure hPa : 320

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm : 1000 Speed

Del.quantity cm3/: 219.0...227.0 1000 s: (217.0...229.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 142.0...146.0 1000 s: (140.0...148.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 1040...1050 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 125.0...155.0 1000 s: (-)

Rack travel in mm: 10.30...10.70

LOW IDLE

: 225 Speed rpm

Rack travel in mm : 4.70...4.90

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO

diaphragm

Note remarks

Test sheet : MB 11,0 y : 19.06.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 646 906

Injection pump

Pump designation: PE6P12OA32OLS7832

EP type number : 0 412 626 836

Governor

Governor design. : RQ300/1050PA952 Governer no. : 0 421 801 521

Customer-spec. information

Customer : MERCEDES-BENZ

: CM401 LA Engine

1st version kW : 228.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order

: 6-3-5-2-4-1

Phasing

: 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.80...15.00

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 6.4...7.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-le /er position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread : 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm : 20.0

Testing: 1st rack travel in: 13.70 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1150...1180 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rom Rack travel in mm: 6.7 Testing: Speed : 200 rom Minimum rack trave: 8.70 : 300 Speed rpm Rack travel in mm : 6.40...7.00 Rack travel in mm : 2.00 : 390...430 Speed mon TORQUE CONTROL Dimension a mm : 0.35 2nd speed rpm : 1050 Rack travel in m: 14.70...14.90 : 800 3rd speed rpm Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1000 : 14.80...15.00 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 11.20...11.40 2nd pressure hPa : 550 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1400 Rack travel in m: 14.90...15.00 * 4th pressure hPa : Rack travel in m: 9.70...10.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Speed rpm : 1050 Del.quantity cm3/ : 221.0...224.0 1000 s: (218.0...227.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 rpm : 800 Speed Del.quantity cm3/: 235.0...239.0 1000 s: (232.0...242.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 129.0...131.0 1000 s: (126.0...134.0) cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.70 Speed rpm : 1095...1110

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Aneroid pressure h: 1600

Note remarks

Test sheet : MB 11,0 t 6 Edition : 19.06.90

Replaces

Test oil : ISO-4113

: 0 402 646 907 Combination no.

Injection pump

Pump designation : PE6P120A320LS7808-2

EP type number : 0 412 626 833

Governor

Governor design. : RQV350..950PA870-8

: 0 421 813 861 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

: 242.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.80...14.00

Del.guantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.2...5.5 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.30...1.70 travel mm

: 425 2nd speed rpm

: 2.20...2.70 travel mm

700 3rd speed rpm

: 4.10...4.60 travel mm

rpm : 1010 4th speed

: 7.80...8.30 : 1200 travel mm

5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1040 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 14.10...14.30 1st version 4th pressure hPa : 1150 rpm : 600 Speed Aneroid pressure h: 800 Rack travel in m: 14.50...14.70 : 214.0...216.0 5th pressure hPa : -Del.quantity 1000 Rack travel in m: 9.20...9.50 : (211.0...219.0) cm3 : 5.00 Spread 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 270 (290) 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 114...122 1st version Aneroid pressure h: 1350 Testina: Speed rpm: 950
Del.quantity cm3/: 245.0...247.0
1000 s: (242.0...250.0) 1st rack travel in: 13.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Spread cm3 : 8.00Speed 1000 s: (12.0) 4th rack travel in: 1200 Aneroid pressure h: 1350 rpm : 0.00...1.00 Speed Speed rpm : 800 Del.quantity cm3/: 244.0...248.0 1000 s: (241.0...251.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 58...66 Spread 1000 s: (12.0) Aneroid pressure h: -Testing: Speed rpm : 500 Del.quantity cm3/ : 145.0...147.0 1000 s: (142.0...150.0) Speed rpm : 200 Minimum rack trave: 7.70 rpm : 350 Rack travel in mm : 5.20...5.50 Spread cm3 : 8.00 1000 s: (12.0) CONSTANT REGULATION rpm : 350...500 Speed **BREAKAWAY** TORQUE CONTROL Dimension a mm 1st version : 950 2nd speed rpm 1mm rack travel less than Rack travel in m: 14.90...15.10 : 800 3rd speed rpm full load rack tr: 13.90 Rack travel in m: 14.90...15.10 rpm : 990...1000 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0) 1st version Setting Speed : 600 rpm hPa : 800 Remarks: Pressure : 13.80...14.00 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.60...10.80 2nd pressure hPa : 550 Rack travel in m: 12.90...13.10 3rd pressure hPa : 1050

Note remarks

Test sheet : MB 11.0 t 7 : 06.04.90 **Fdition**

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 908

Injection pump

Pump designation : PE6P120A320LS7808

EP type number : 0 412 626 816

Governor

Governor design. : RQ300/950PA932-3

Governer no. : 0 421 801 528

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M441 LA

1st version kW : 249.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0.8 diameter mm

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

-360

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.50...13.70

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...6.0

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-le er position Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

Del.quantity : 207.0...209.0

1000 : (204.0...212.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom Rack travel in mm: 20.0

1st version Aneroid pressure h: 1350 Testing: Speed rpm: 950
Del.quantity cm3/: 238.0...240.0
1000 s: (235.0...243.0) 1st rack travel in: 13.60 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1065...1095 cm3 : 8.00 Spread Speed 4th rack travel in: 1200 1000 s: (12.) Aneroid pressure h: 1350 rpm : 0.00...1.50Speed : 800 Speed rpm Del.quantity cm3/: 236.0...239.0 LOW IDLE 1 Setting point w/out bumper spring 1000 s: (233.0...242.0) : 300 cm3 : 8.00 Spread rpm Rack travel in mm: 5.8 1000 s: (12.00 : 500 Speed rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) Testina: Speed : 200 rpm cm3 : 8.00Minimum rack trave: 7.70 Spread 1000 s: (12.00 Speed : 300 rom Rack travel in mm : 5.70...6.00 Rack travel in mm : 2.00 Speed : 380...420 BREAKAWAY rom TORQUE CONTROL 1st version : 0.30 1mm rack travel less than Dimension a mm : 950 2nd speed rpm Rack travel in m: 14.60...14.80 full load rack tr: 13.60 : 700 3rd speed rpm Speed rpm : 990...1005 Rack travel in m: 14.60...14.80 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test : 100 Speed rpm Del.guantity cm3/: 205.0...225.0 1st version 1000 s: (201.0...229.0) Setting : 600 Remarks: Speed rpm hPa : 900 Pressure : : 13.50...13.70 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 10.60...10.80 2nd pressure hPa : 550 Rack travel in m: 12.70...12.90 3rd pressure hPa : 1150 Rack travel in m: 13.80...14.00 4th pressure hPa : 1250 Rack travel in m: 14.30...14.50 5th pressure hPa : Rack travel in m: 8.90...9.20 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

: DAF 11,7 L Test sheet : 06.07.90 Edition

Replaces

Test oil : ISO-4113

: 0 402 646 912 Combination no.

Injection pump

Pump designation : PE6P12DA32DRS7218 EP type number : 0 412 626 839

Governor

Governor design: RQ250/1000PA936-1

: 0 421 801 508 Governer no.

Customer-spec. information Customer : DAF

Engine : WS 268

: 268.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.30...5.40 Prestroke mm : (5.25...5.45)

Rack travel in mm : 14.50...15.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed rpm : 850

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.4...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8

Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 550

Speed Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1000 Del.quantity : 237.0...239.0 Aneroiu p. Del.quantity 1000 : (234.0...242.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 550 Speed rpm Rack travel in mm: 15.8

Testing:

1st rack travel in: 14.00

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.40

LOW TDLF 1

Setting point w/out bumper spring

Speed rpm Rack travel in mm: 5.0

Testing:

Speed rpm : 100 Minimum rack trave: 7.00 rpm : 250 Speed

Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00

rpm : 310...350 Speed

TORQUE CONTROL

Dimension a mm : -

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 15.00...15.10

2nd speed rpm : 1000

Rack travel in m: 14.90...15.10

Aneroid/Altitude

Compensator Test

1st version Setting

: 600 Speed rpm Pressure hPa : 1000

: 15.00...15.10 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 480

Rack travel in m: 14.20...14.30

3rd pressure hPa : 330 Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed : 600 man

Del.quantity cm3/: 166.0...170.0

1000 s: (164.0...172.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00

Speed rpm : 1035...1050

LOW IDLE

Speed rpm

Rack travel in mm : 4.90...5.10

Remarks:

Note remarks

Test sheet : DAF 11,7 L1 Edition : 06.07.90

Replaces

Test oil : ISO-4113

: 0 402 646 913 Combination no.

Injection pump

Pump designation : PE6P120A320RS7218

: 0 412 626 839 EP type number

Governor

Governor design. : RQV250...1000PA939

: 0 421 813 829 Governer no.

Customer-spec. information

Customer : DAF

Enaine : WS 268

: 268.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter

x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.30...5.40

: (5.25...5.45)

Rack travel in mm : 14.50...15.50 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.25...3.75

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 23.7...23.9

100 s: (23.4...24.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 6.4...6.8 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

7.80...8.00 travel mm : 250

2nd speed rpm travel mm

: 0.70...1.10 : 400 3rd speed rom

: 2.50...3.10 travel mm 4th speed : 700 rpm

: 4.50...4.90 travel mm

1350 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rom : 1075 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

: 237.0...239.0 Del.quantity

1000 : (234.0...242.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 51...59

Testing:

1st rack travel in: 14.00

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1150...1180 4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 12...20

Testing:

Speed : 100 rom Minimum rack trave: 7.00 rpm : 250 Speed

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

Speed rpm : 270...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 600 hPa : 1000 Pressure

: 15.00...15.10 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 12.40...12.60

2nd pressure hPa : 480

Rack travel in m: 14.20...14.30

3rd pressure hPa : 330

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/ : 166.0...170.0

1000 s: (164.0...172.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00

rpm : 1040...1050 Speed

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 4.90...5.10

Remarks:

Note remarks

: MB 14,7 a 1 Test sheet : 15.03.90 Edition Replaces : 24.2.89 : ISO-4113 Test oil

: 0 402 648 812 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design: : RQ300/1050PA717 Governer no. : 0 421 801 258

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442 LA Engine

: 320.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5- 4-Firing order

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.1...6.7 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEF'E POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 680

: 220.0...222.0 Del.quantity

1000 : (217.0...225.0)

: 5.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version

Setting point:

: 600 Speed rom

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1150 Testing: 1st rack travel in: 14.40 Speed rpm : 1095...1110 rpm : 1050 Speed Del.quantity cm3/: 229.0...232.0 1000 s: (226.0...235.0) 2nd rack travel in: 4.00 rpm : 1160...1190 cm3 : 8.00Speed Spread 4th rack travel in: 1300 1000 s: (12.0) Aneroid pressure h: 1150 rpm : 0.00...1.50Speed Speed rpm Del.quantity cm3/: 247.0...251.0 1000 s: (244.0...254.0) LOW IDLE 1 Setting point w/out bumper spring cm3 : 8.00 : 300 Spread rpm Rack travel in mm: 6.4 1000 s: (12.0) Aneroid pressure h: -Testing: Speed rpm : 500 Del.quantity cm3/: 149.0...151.0 rpm : 200 Speed 1000 s: (146.0...154.0) Minimum rack trave: 8.00 : 300 cm3 : 8.00rpm Spread 1000 s: (12.0) Rack travel in mm : 6.10...6.70 Rack travel in mm: 2.00 Speed : 380...420 rpm **BREAKAWAY** TORQUE CONTROL : 0.90 1st version Dimension a mm nd speed rpm : 1050 Rack travel in m: 15.20...15.40 1mm rack travel less than 2nd speed 3rd speed rpm : 850 full load rack tr: 14.40 Rack travel in m: 15.80...16.10 rpm : 1095...1110 Speed STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test Speed : 100 rpm Del.quantity cm3/: 200.0...220.0 1st version 1000 s: (196.0...224.0) Settina : 600 Speed rpm hPa : 680 Pressure Remarks: : 14.70...14.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 310 Rack travel in m: 12.10...12.30 2nd pressure hPa : 470 Rack travel in m: 13.70...13.90 3rd pressure hPa : 820 Rack travel in m: 14.90...15.00 4th pressure hPa : 950 Rack travel in m: 15.60...15.90 5th pressure hPa : -Rack travel in m: 11.40...11.60 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 14,7 a 4 : 23.04.90 Edition

: 3.11.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 817

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQ300/1050PA762-5

: 0 421 801 399 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 A Engine

: 260.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315 : 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 500 1st speed

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 300.0 2nd speed

Rack travel in mm : 6.0...6.4 Del.quantity cm3/ : 1.3...1.9 100 s: (1.0...2.2)

Spread cm3 : 0.5100 s: (0.8)

GUIDE SLEF'E POSITION Control-lever position

Degree: -2

rpm : 600 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed Aneroid pressure h: 650

Del.quantity : 204.0...206.0

1000 : (201.0...209.0)

Spread cm3 : 4.00

1000 : (7.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 1st version Testing: Aneroid pressure h: 1050 Speed rpm : 1050 Del.quantity cm3/: 178.0...181.0 1st rack travel in: 11.70 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 1000 s: (175.0...184.0) rpm : 1170...1200 cm3 : 7.00Speed Spread 4th rack travel in: 1300 1000 s: (10.0) Aneroid pressure h: 1050 rom : 0.00...1.50Speed Speed rpm : 700 Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) LOW IDLE 1 Setting point w/out bumper spring cm3 : 7.00mari : 300 Spread 1000 s: (10.0) Rack travel in mm: 6.2 Aneroid pressure h: 1050 : 850 Testina: Speed rpm Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) Speed : 200 riom Minimum rack trave: 8.00 : 300 cm3 : 7.00Spread rom Rack travel in mm : 6.00...6.40 1000 s: (10.0) Rack travel in mm: 2.00 Aneroid pressure h: -: 380...420 Speed rpm : 500 Speed man Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) Spread cm3 : 7.00 TORQUE CONTROL Dimension a mm : 0.75 : 1050 1000 s: (10.0) 2nd speed rpm Rack travel in m: 12.70...12.90 rpm : 850 3rd speed Rack travel in m: 13.70...14.00 BREAKAWAY rpm : 700 4th speed Rack travel in m: 14.40...14.60 1st version 1mm rack travel less than Aneroid/Altitude Compensator Test full load rack tr: 11.70 Speed rpm : 1095...1110 1st version STARTING FUEL DELIVERY Settina : 600 Speed rom : 100 hPa : 650 Pressure Speed rpm Del.quantity cm3/: 175.0...190.0 : 14.00...14.20 Rack travel mm 1000 s: (171.0...194.0) Measurement 1/min : 600Speed Remarks: 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 * Increase in control-rod travel with 2nd pressure hPa : 400 respect to setting at least 0.1 mm Rack travel in m: 13.30...13.60 3rd pressure hPa : 850 Rack travel in m: 14.10...14.20 * 4th pressure hPa : Rack travel in m: 11.40...11.70 START CUT-OUT 1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 14,7 a 5 : 17.05.90 Test sheet Edition : 3.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 825

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQV300..1050PA797-3

: 0 421 813 627 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 A Engine

: 260.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 105

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6-3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 500 1st speed

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.4...20.6

100 s: (20.1...20.9)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm: 6.0...6.4

Del.quantity cm3/: 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.5 Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.20...1.40 travel mm 2nd speed rpm : 600

: 4.90...5.10 travel mm rpm : 1075 3rd speed

: 7.40...7.60 travel mm

rpm : 1100 4th speed

: 8.00...8.20 travel mm rpm : 1150 5th speed

: 9.00...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1125 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 400 Rack travel in m: 13.30...13.60 1st version 3rd pressure hPa : 850 Speed rpm : 500 Rack travel in m: 14.10...14.20 * Aneroid pressure h: 650 Del.quantity : 204.0...206.0 4th pressure hPa : -1000 : (201.0...209.0) Rack travel in m: 11.40...11.70 : 4.00 Spread cm3 : (7.00) START CUT-OUT 1000 1/min: 220 (240) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 114...122 1st version Aneroid pressure h: 1050 Testing: rpm : 1050 1st rack travel in: 11.70 Speed Del.quantity cm3/: 178.0...181.0 1000 s: (175.0...184.0) Spread cm3 : 7.00 1000 s: (10.0) rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm: 1155...1185 4th rack travel in: 1300 rpm : 0.00...1.00Aneroid pressure h: 1050 Speed : 700 Speed rpm Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) LOW TDIE 1 Control lever cm3 : 7.00position degrees: 80...88 Spread 1000 s: (10.0) Aneroid pressure h: 1050 Testing: Speed Speed : 850 rpm rpm Del.quantity cm3/: 202.0...206.0 1000 s: (199.0...209.0) Minimum rack trave: 7.70 Speed rpm : 300 Rack travel in mm : 6.00...6.40 cm3 : 7.00Spread 1000 s: (10.0) CONSTANT REGULATION Aneroid pressure h: rpm : 300...450 rpm : 500 Speed Speed Del.quantity cm3/: 146.0...148.0 1000 s: (143.0...151.0) TORQUE CONTROL cm3 : 7.00Dimension a mm : 1.40 Spread 1000 s: (10.0) : 1050 2nd speed rpm Rack travel in m: 12.70...12.90 rpm : 850 3rd speed Rack travel in m: 13.70...14.00 BREAKAWAY 4th speed rpm : 700 Rack travel in m: 14.30...14.50 1st version 1mm rack travel less than Aneroid/Altitude full load rack tr: 11.70 Compensator Test rpm : 1090...1100 Speed 1st version STARTING FUEL DELIVERY Setting : 600 Speed rpm Speed rpm : 100 Del.quantity cm3/: 175.0...190.0 hPa : 650 Pressure Rack travel mm : 14.00...14.20 1000 s: (171.0...194.0) Measurement Speed 1/min: 600 Remarks: 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 * Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 14,7 e : 17.05.90 Edition

Replaces

Test oil : ISO-4113

: 0 402 648 831 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RQV350..1050PA842-3

Governer no. : 0 421 813 622

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M442 LA Engine

: 320.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8- 7- 2- 6- 3- 5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

: 0.80...1.20 travel mm

rpm : 510 2nd speed

: 3.60...4.10 rpm : 1100 : 7.80...8.40 travel mm

3rd speed

travel mm

rpm : 1270 4th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 600 Aneroid pressure h: 750 Rack travel in m: 15.50...15.70 5th pressure hPa : -: 212.0...214.0 Rack travel in m: 11.40...11.70 Del.quantity 1000 : (209.0...217.0) : 5.00 START CUT-OUT Spread cm31000 : (9.00) 1/min: 270 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control Lever position degrees: 58...66 1st version Aneroid pressure h: 1250 1050 Testina: Speed rpm Del.quantity cm3/: 227.0...230.0 1000 s: (224.0...233.0) 1st rack travel in: 14.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 cm3 : 8.00Spread rpm : 1130...1160 1000 s: (12.0) Speed 4th rack travel in: 1300 Speed rpm: 0.00...1.50 Aneroid pressure h: 1250 Speed rpm: 900
Del.quantity cm3/: 238.0...242.0
1000 s: (235.0...245.0) LOW IDLE 1 cm3 : 8.00Control lever Spread 1000 s: (12.0) position degrees: 10...18 Aneroid pressure h: 1250 Speed rpm : 1050 Del.quantity cm3/ : 156.0...159.0 Testing: Speed : 100 rpm Minimum rack trave: 7.40 1000 s: (153.0...162.0) : 350 cm3 : 8.00rpm Spread 1000 s: (12.0) Rack travel in mm : 5.50...6.10 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 150.0...152.0 CONSTANT REGULATION rpm : 350...550 Speed 1000 s: (147.0...155.0) cm3 : 8.00 TORQUE CONTROL Spread : 1050 1000 s: (12.0) 2nd speed rpm Rack travel in m: 15.20...15.40 : 975 3rd speed rpm Rack travel in m: 15.40...15.60 **BREAKAWAY** Aneroid/Altitude 1st version 1mm rack travel less than Compensator Test full load rack tr: 14.20 1st version rpm : 1090...1100 Speed Settina Speed rpm : 600 STARTING FUEL DELIVERY Pressure hPa : 750 Rack travel mm : 14.50...14.70 Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 Measurement 1000 s: (236.0...264.0) $1/\min: 600$ Speed 1st pressure hPa : 400 Remarks: Rack travel in m: 12.20...12.40 2nd pressure hPa : 550 Rack travel in m: 13.60...13.80 3rd pressure hPa : 900

Rack travel in m: 14.70...14.80

4th pressure hPa : 1250

Note remarks

Test sheet : MB 14,7 e 2 Edition : 08.06.90

Replaces

Test oil : ISO-4113

: 0 402 648 831 Combination no.

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

: RQV350..1050PA842-7 Governor design.

: 0 421 813 874 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

: 320.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm : 5.7...5.9 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 0.80...1.20 travel mm

rpm : 510 2nd speed

: 3.60...4.10 rpm : 1100 travel mm

3rd speed

: 7.80...8.40 travel mm

rpm : 1270 4th speed

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 4th pressure hPa : 1250 Aneroid pressure h: 750 Rack travel in m: 15.50...15.70 Del.quantity : 212.0...217.0) 5th pressure hPa : -Rack travel in m: 11.40...11.70 : 5.00 : (9.00) Spread cm3 1000 START CUT-OUT 1/min: 270 (290) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 58...66 1st version Aneroid pressure h: 1250 Testina: : 1050 1st rack travel in: 14.20 rpm Del.quantity cm3/: 227.0...230.0 1000 s: (224.0...233.0) rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm: 1130...1160 4th rack travel in: 1300 cm3 : 8.00 Spread 1000 s: (12.) Aneroid pressure h: 1250 rpm : 0.00...1.50 Speed : 900 Speed rom Del.quantity cm3/: 238.0...242.0 LOW TDLF 1 1000 s: (235.0...245.0) Control Lever : 8.00 position degrees: 10...18 cm3 Spread 1000 s: (12.00 Aneroid pressure h:)250 Testing: : 100 : 1050 Speed Speed rpm rpm Del.quantity cm3/: 156.0...159.0 1000 s: (153.0...162.0) Minimum rack trave: 7.40 rpm : 350 cm3 : 8.00 Rack travel in mm : 5.50...6.10 Spread 1000 s: (12.00 Speed rpm : 500 Del.quantity cm3/: 150.0...152.0 CONSTANT REGULATION rpm : 350...550 Speed 1000 s: (147.0...155.0) TORQUE CONTROL Spread cm3 : 8.00 : 0.20 1000 s: (12.00 Dimension a mm nd speed rpm : 1050 Rack travel in m: 15.20...15.40 2nd speed 3rd speed : 975 BREAKAWAY rpm Rack travel in m: 15.40...15.60 1st version 1mm rack travel less than Aneroid/Altitude Compensator Test full load rack tr: 14.20 rpm : 1090...1100 Speed 1st version Setting STARTING FUEL DELIVERY : 600 Speed rpm hPa : 750 Pressure : 14.50...14.70 Rack travel mm : 100 Speed rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement Speed $1/\min : 600$ Remarks: 1st pressure hPa : 400 Rack travel in m: 12.20...12.40 2nd pressure hPa : 550 Rack travel in m: 13.60...13.80

3rd pressure hPa : 900

Rack travel in m: 14.70...14.80

Note remarks

Test sheet : MB 14,7 a10 : 30.03.90 : 1.9.89 Edition Replaces Test oil : TSO-4113

Combination no. : 0 402 648 833

Injection pump

Pump designation : PE8P120A320LS7801-1 EP type number : 0 412 628 818

Governor

Governor design. : RQV350..1050PA866-3

: 0 421 813 703 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 A Engine

: 260.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm : 5.6...6.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm 2nd speed rpm : 600

: 4.90...5.10 travel mm

: 1100 3rd speed rpm

: 8.00...8.50 travel mm

rpm : 1170 4th speed

travel mm : 9.20...9.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1090

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050Aneroid pressure h: 1100 Del.quantity : 181.0...186.0) cm3 : 5.00 1000 : (9.00) Spread Speed RATED SPEED 1st version Control lever position degrees: 118...126 Testina: Speed 1st rack travel in: 11.80 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Spread rpm : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed Speed LOW IDLE 1 Control lever Spread position degrees: 67...75 Testing: Speed Speed rpm Minimum rack trave: 7.30 Speed rpm : 350 Rack travel in mm : 5.60...5.80 Spread CONSTANT REGULATION rpm : 350...550 Speed BREAKAWAY TORQUE CONTROL Dimension a mm : 1.60 Torque control curve – 1st version rpm : 1050 1st speed Rack travel in m: 12.80...12.90 Speed 2nd speed rpm : 750 Rack travel in m: 14.40...14.60 3rd speed rpm : 950 Rack travel in m: 13.50...13.60 4th speed rpm : 830 Rack travel in m: 14.30...14.50 Aneroid/Altitude Remarks: Compensator Test 1st version Setting Speed : 600 rpm hPa : -Pressure Rack travel mm : 11.20...11.50 Measurement Speed $1/\min : 600$

Rack travel in m: 11.90...12.10 2nd pressure hPa : 600 Rack travel in m: 13.60...13.80 START CUT-OUT 1/min: 270 (250) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 : 700 rpm Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1100 : 1050 rpm Del.quantity cm3/: 152.0...154.0 * 1000 s: (149.0...157.0) cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) cm3 : 8.001000 s: (12.0) 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1090...1100 STARTING FUEL DELIVERY : 100 rpm Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) * = Set at reduced-delivery stop.

1st pressure hPa : 420

Note remarks

Test sheet : MB 14,7 a 8 Edition : 01.02.90 Replaces : 7.7.89 Test oil : ISO-4113

Combination no. : 0 402 648 841

Injection pump

Pump designation: PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

: RQ300/1050PA762-5 Governor design.

: 0 421 801 399 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 A Engine

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 500 1st speed

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 20.3...20.5

100 s: (20.0...20.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 6.0...6.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEF'E POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed

Aneroid pressure h: 650

: 203.0...205.0 Del.quantity 1000 : (200.0...208.0)

: 5.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom

Rack travel in mm: 20.0 Aneroid pressure h: 1050 : 1050 Speed rpm Del.quantity cm3/: 180.0...183.0 1000 s: (177.0...186.0) Testina: 1st rack travel in: 11.80 cm3 : 8.00 rpm : 1095...1110 Spread Speed 2nd rack travel in: 4.00 1000 s: (12.0) rpm : 1170...1200 Aneroid pressure h: 1050 Speed 4th rack travel in: 1300 Speed : 700 rpm Del.quantity cm3/: 215.0...219.0 1000 s: (212.0...222.0) rpm : 0.00...1.50 Speed cm3 : 8.00 LOW IDLE 1 Spread 1000 s: (12.0) Setting point w/out bumper spring Aneroid pressure h: 1050 Speed : 300 rom : 850 Rack travel in mm: 6.3 Speed rpm Del.quantity cm3/: 206.0...210.0 1000 s: (203.0...213.0) Testing: cm3 : 8.00: 200 Speed rpm Spread 1000 s: (12.0) Minimum rack trave: 8.00 : 300 rpm Aneroid pressure h: -: 500 Rack travel in mm : 6.20...6.40 Speed rom Del.quantity cm3/: 149.0...151.0 Rack travel in mm : 2.00 rpm : 380...420 1000 s: (146.0...154.0) Speed cm3 : 8.00 Spread 1000 s: (12.0) TORQUE CONTROL : 0.75 Dimension a mm : 1050 2nd speed rpm Rack travel in m: 12.70...12.90 BREAKAWAY : 850 3rd speed rpm Rack travel in m: 13.70...14.00 h speed rpm : 700 1st version 4th speed rpm 1mm rack travel less than Rack travel in m: 14.40...14.60 full load rack tr: 11.80 Aneroid/Altitude rpm : 1095...1110 Speed Compensator Test STARTING FUEL DELIVERY 1st version Setting Speed : 100 rpm Del.quantity cm3/: 175.0...190.0 : 600 Speed rom 1000 s: (171.0...194.0) Pressure hPa : 650 : 14.10...14.30 Rack travel mm Remarks: Measurement Speed 1/min: 600 * Increase in control-rod travel with 1st pressure hPa : 300 respect to setting at least 0.1 mm Rack travel in m: 12.40...12.60 2nd pressure hPa : 400 Rack travel in m: 13.40...13.70 3rd pressure hPa : 850 Rack travel in m: 14.20...14.30 * START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

1st version

Note remarks

: MB 14,7 j Test sheet : 06.07.90 Edition Replaces : 2.10.89 Test oil : ISO-4113

Combination no. : 0 402 648 844

Injection pump

Pump designation: PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQ300/1050PA717-2

: 0 421 801 439 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

: 353.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 075 Test lines

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.6...23.9

100 s: (23.3...24.2)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed

Rack travel in mm : 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.5

Spread

100 s: (0.8)

GUIDE SLEF'E POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

Del.quantity : 230.0...242.0)

: 4.00 cm3 Spread

1000 : (7.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom

Rack travel in mm: 20.0 1st version Testing: Aneroid pressure h: 1600 Speed rpm : 1050 Del.quantity cm3/ : 248.0...252.0 1st rack travel in: 13.40 Speed rpm : 1095...1110 2nd rack travel in: 4.00 1000 s: (245.0...255.0) Speed rpm : 1150...1180 cm3 : 7.00Spread 1000 s: (10.) 4th rack travel in: 1300 rpm : 0.00...1.50Speed Aneroid pressure h: 1600 Speed rpm : 850 Del.quantity cm3/: 265.0...269.0 1000 s: (262.0...272.0) Spread cm3: 7.00 LOW IDLE 1 Setting point w/out bumper spring : 300 rpm 1000 s: (10.00 Rack travel in mm: 6.2 rpm : 500 Speed Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) Spread cm3: 7.00 1000 s: (10.00 Testina: Speed : 200 rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 5.90...6.50 Rack travel in mm: 2.00 BREAKAWAY rpm : 380...420 Speed TORQUE CONTROL 1st version : 0.40 Dimension a mm 1mm rack travel less than : 1050 2nd speed rpm Rack travel in m: 14.40...14.60 full load rack tr: 13.40 3rd speed rpm : 850 rpm : 1095...1110 Speed Rack travel in m: 15.00...15.30 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test rpm : 100 Del.quantity cm3/: 240.0...260.0 1st version 1000 s: (236.0...264.0) Setting : 600 Speed rpm Remarks: Pressure hPa : 900 Rack travel mm : 13.60...13.80 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 Rack travel in m: 13.70...13.90 4th pressure hPa : 1350 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 14,7 k : 06.07.90 Test sheet Edition : 6.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 845

Injection pump

Pump designation : PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQV300..1050PA797-5

: 0 421 813 702 Governer no.

Customer-spec. information

: DAIMLER-BENZ Customer

: 0M442 LA Engine

: 353.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.6...23.9

100 s: (23.3...24.2)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.5Spread 100 s: (0.8)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

2nd speed : 800 rpm

: 5.80...6.10 travel mm

: 1120 3rd speed rpm

travel mm : 8.20...8.80

: 1180 4th speed rpm

: 9.60...10.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900 : 236.0...239.0 Del.quantity 1000 : (233.0...242.0) cm3 : 4.00 Spread 1000 : (7.00) RATED SPEED 1st version Control Lever position degrees: 117...125 Testing: 1st rack travel in: 13.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testina: : 200 Speed rpm Minimum rack trave: 8.00 Speed : 300 rpm Rack travel in mm : 5.90...6.50 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 1.30 nd speed rpm : 1050 Rack travel in m: 14.40...14.60 2nd speed rpm 3rd speed rpm : 800 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 900 Pressure : 13.60...13.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650

Rack travel in m: 12.80...13.00

Rack travel in m: 13.70...13.90 *

3rd pressure hPa : 1050

4th pressure hPa : 1350 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 rpm : 1050 Del.quantity cm3/: 248.0...252.0 1000 s: (245.0...255.0) Spread cm3 : 7.001000 s: (10.) Aneroid pressure h: 1600 : 800 Speed rpm Del.quantity cm3/: 265.0...269.0 1000 s: (262.0...272.0) Spread cm3 : 7.001000 s: (10.00 Speed rpm : 500 Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) cm3 : 7.00Spread 1000 s: (10.00 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.40 Speed rpm : 1090...1100 STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 240.0...260.0

1000 s: (236.0...264.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : SCA 14,2 n Edition : 05.03.90 : 29.3.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 852

Injection pump

Pump designation: PE8P120A920/4LS7166

EP type number : 0 412 628 832

Governor

Governor design. : RQ750PA758-2 Governer no. : 0 421 801 462

Customer-spec. information Customer : SAAB-SCANIA

: DS 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

cm3 : 0.7Spread

100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 252.0...254.0 Del.quantity

1000 : (249.0...257.0)

: 7.00 Spread cm3 1000 : (10.00)

RATED SPEED

1st version

Control Lever

position degrees: 88...96

Testing:

1st rack travel in: 11.50

rpm : 750...755 Speed

2nd rack travel in: 4.00 Speed rpm : 784...797

4th rack travel in: 850

rom : 0.00...1.00Speed

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.50

rpm : 750...755 Speed

HIGH IDLE

1st version

Rack travel in mm : 5.00...5.20 Spread cm3 : 4.00 1000 s: (7.00)

Remarks:

Start-of-delivery setting with ROBO diaphragm.

APPLICATION

Generator

Generator set

Note remarks

Test sheet : SCA 14,0 h3 : 12.02.90

Edition Replaces

Test oil : TSO-4113

: 0 402 648 853 Combination no.

Injection pump

Pump designation : PE8P120A920/4LS7125

EP type number

: 0 412 628 833

Governor

: RQV350...1050PA795-2 Governor design.

: 0 421 813 721 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DS 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar : 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

(4.95...5.15)Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-6- 8 Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75)Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm: 4.6...5.0 Del.quantity cm3/: 1.5...1.9

100 s: (-) Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

2nd speed rpm : 350

travel mm : 1.30...1.70

3rd speed : 650 rpm travel mm

: 4.10...4.70 : 1095

4th speed rpm

: 7.80...8.00 travel mm

5th speed : 1215 rpm

: 9.10...9.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1170 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 214.0...216.0 Del.quantity

1000 : (211.0...219.0)

Spread cm3 : 6.00 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 100...108

Testing:

1st rack travel in: 12.50

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm: 1200...1230 4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 69...77

Testing:

: 100 rpm Speed Minimum rack trave: 10.50

rpm : 350

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00

: 370...430 Speed rom

FUEL DELIVERY CHARACTERISTICS

1st version

: 950 Speed rom

Del.quantity cm3/: 203.0...211.0 1000 s: (201.0...213.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 240.0...290.0 Rack travel in mm: 20.00...21.00

LOW IDLE

: 350 rpm

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

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Note remarks

: FIA 17.2 e : 08.06.90 Test sheet Edition : 13.12.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 854

Injection pump

Pump designation: PE8P130A920/5LS7822

: 0 412 638 802 EP type number

Governor

: RQV300...950PA905 Governor design.

: 0 421 813 723 Governer no.

Customer-spec. information Customer : IVECO-FIAT

: 8280.42.001 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 40...45

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 688 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.10...5.20 : (5.05...5.25) Rack travel in mm : 9.00...12.00

: 1- 8- 4- 3- 6- 5-7- 2 Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 550

Rack travel in mm : 11.60...11.70

Del.guantity cm3/: 23.5...23.8

100 s: (23.1...24.1)

cm3 : 0.8Spread

100 s: (1.2)

rpm : 300.02nd speed Rack travel in mm: 6.1...6.5 Del.quantity cm3/: 2.0...2.6

100 s: (1.6...3.0) cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 225

: 0.60...1.10 travel mm

: 350 2nd speed rpm

travel mm : 2.10...2.50

3rd speed : 600 rpm

: 3.80...4.40 travel mm

950 4th speed rpm

: 7.20...7.40 travel mm

: 1200 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1020

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 900

Del.quantity : 235.0...238.0

1000 : (231.5...241.5)

cm3 : 8.00 1000 : (12.00) Spread

1st version Control lever

RATED SPEED

position degrees: 109...117

Testina:

1st rack travel in: 10.60 rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1075...1105 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 63...71

Testing:

Speed : 200 rom Minimum rack trave: 7.70 rpm : 300

Rack travel in mm : 6.20...6.40

CONSTANT REGULATION

rpm : 380...480 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm hPa : 900 Pressure

Rack travel mm : 11.60...11.70

Measurement

1/min: 500 Speed

1st pressure hPa : Rack travel in m: 9.50...9.80

2nd pressure hPa : 440

Rack travel in m: 11.10...11.20

3rd pressure hPa : 400

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 950 Del.quantity cm3/: 215.0...222.0 1000 s: (211.5...225.5)

Aneroid pressure h: -Speed : 500 rpm

Del.quantity cm3/: 173.0...176.0 1000 s: (169.5...179.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 210.0...240.0

1000 s: (206.0...244.0)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Note remarks

: MB 14,7 o Test sheet : 12.02.90 Edition : 13.12.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 648 855

Injection pump

Pump designation : PE8P120A320LS7823 : 0 412 628 835 EP type number

Governor

Governor design. : RQV350..1050PA870-5

: 0 421 813 735 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

: 353.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rom: 600 1st speed

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 5.0...5.6 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEFVE TRAVEL

rpm : 350 1st speed

: 1.40...1.60 travel mm

2nd speed : 800 rpm

: 4.70...5.10 travel mm

: 1100 3rd speed rpm

: 7.60...8.20 travel mm

4th speed rpm : 1175

: 9.20...9.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600Aneroid pressure h: 900

: 234.0...237.0 Del.quantity 5th pressure hPa : -1000 : (231.0...240.0) Rack travel in m: 10.10...10.40 : 5.00 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 270 (290) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 115...123 1st version Testing: Aneroid pressure h: 1600 : 1050 1st rack travel in: 13.40 Speed rpm rpm : 1090...1100 Del.quantity cm3/: 252.0...256.0 1000 s: (249.0...259.0) Speed 2nd rack travel in: 4.00 Speed rpm: 1170...1200 4th rack travel in: 1300 cm3 : 8.00 Spread 1000 s: (12.) Aneroid pressure h: 1600 rpm : 0.00...1.00Speed rpm : 800 Speed Del.quantity cm3/: 270.0...274.0 LOW IDLE 1 1000 s: (267.0...277.0) Control lever cm3 : 8.00 position degrees: 62...70 Spread 1000 s: (12.00 Aneroid pressure h:)600 Speed Testina: : 1050 Speed rpm Speed rpm Del.quantity cm3/: 184.0...187.0 1000 s: (181.0...190.0) Minimum rack trave: 7.10 : 350 Speed rom Rack travel in mm : 5.00...5.60 cm3 : 8.00 Spread 1000 s: (12.00 rpm : 500 CONSTANT REGULATION Speed Del.quantity cm3/: 149.0...151.0 rpm : 350...550 Speed 1000 s: (146.0...154.0) cm3 : 8.00 TORQUE CONTROL Spread 1000 s: (12.00 Dimension a mm : 0.50 : 1050 2nd speed rpm Rack travel in m: 14.40...14.60 : 800 3rd speed rpm BREAKAWAY Rack travel in m: 15.30...15.50 1st version 1mm rack travel less than Aneroid/Altitude Compensator Test full load rack tr: 13.40 rpm : 1090...1100 Speed 1st version Settina STARTING FUEL DELIVERY : 600 Speed rom hPa : 900 Pressure : 13.60...13.80 Rack travel mm Speed rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed Remarks: 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 * Increase in control-rod travel with 2nd pressure hPa : 500 respect to setting at least 0.1 mm Rack travel in m: 12.80...13.00

3rd pressure hPa : 1050

Rack travel in m: 13.70...13.90 * 4th pressure hPa : 1250

Rack travel in m: 14.50...14.70

Note remarks

Test sheet : SCA 14,2 m : 12.02.90 Edition

Reptaces

: ISO-4113 Test oil

Combination no. : 0 402 648 863

Injection pump

Pump designation : PE8P120A920/4LS7180

EP type number : 0 412 628 837

Governor

: RQV350...1050PA795-6 Governor design.

: 0 421 813 754 Governer no.

Customer-spec. information Customer : SCANTA

: DSI 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-2-7-3-4-5-Firing order

: 0-45-90-135-180-225-Phasina

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 26.8...27.0

100 s: (26.5...27.3)

cm3 : 0.7Spread

100 s: (1.0)

rpm : 350.0 2nd speed Rack travel in mm: 4.5...4.9

Del.quantity cm3/: 1.5...1.9

100 s: (-) cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 2nd speed

: 1.30...1.70 travel mm

3rd speed rpm : 650

travel mm : 4.10...4.70

: 1145 4th speed rpm

7.80...8.00 travel mm

5th speed rpm : 1255

: 8.80...9.20 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -1 rpm : 1230 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 268.0...270.0 Del.quantity 1000 : (265.0...273.0)

: 7.00 Spread cm3

1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 98...106

Testing:

1st rack travel in: 12.20

Speed rpm : 1090...1100 2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 68...76

Testing:

rpm : 100 Speed Minimum rack trave: 10.30 Speed rpm : 350

Rack travel in mm : 4.50...4.70 Rack travel in mm : 2.00 rpm : 370...430

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1050 Speed

Del.quantity cm3/: 258.0...266.0 1000 s: (256.0...268.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1090...1100 Speed

LOW IDLE

: 350 rpm

Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

G04

Note remarks

Test sheet : MB 14,7 g : 19.06.90 Edition : 24.11.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 864

Injection pump

Pump designation : PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQ300/950PA762-7 Governer no. : 0 421 801 480

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

: 353.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm:600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

GUIDE SLEFVE POSITION Control-lever position

Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

: 254.0...256.0 Del.quantity 1000 : (251.0...259.0)

: 6.00 cm3

Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rom

Rack travel in mm : 20.0 1st version Aneroid pressure h: 1600 Testing: rpm : 950 1st rack travel in: 14.20 Speed Del.quantity cm3/: 270.0...273.0 rpm : 990...1005 Speed 1000 s: (267.0...276.0) 2nd rack travel in: 4.00 rpm : 1070...1100 : 8.00 Speed Spread cm3 4th rack travel in: 1150 1000 s: (12.0) Aneroid pressure h: 1600 Speed rom : 0.00...1.50: 800 Speed rpm Del.quantity cm3/: 270.0...274.0 LOW IDLE 1 1000 s: (267.0...277.0) Setting point w/out bumper spring : 300 cm3 : 8.00 Speed Spread rpm 1000 s: (12.0) Rack travel in mm: 6.2 Aneroid pressure h: -: 500 Testina: Speed rom Del.quantity cm3/: 145.0...147.0 : 200 Speed nom: 1000 s: (142.0...150.0) Minimum rack trave: 7.80 rpm : 300 cm3 : 8.00Spread Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 1000 s: (12.0) rpm : 380...420 Speed BREAKAWAY TORQUE CONTROL : 0.90 Dimension a mm 1st version 2nd speed rpm : 950 1mm rack travel less than Rack travel in m: 15.20...15.40 3rd speed rpm : 800 full load rack tr: 14.20 rpm : 990...1005 Rack travel in m: 15.50...15.70 Speed STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1st version 1000 s: (236.0...264.0) Setting : 600 Speed rpm hPa : 1000 Remarks: Pressure : 14.60...14.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 12.20...12.40 2nd pressure hPa : 700 Rack travel in m: 13.90...14.10 3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1500 Rack travel in m: 15.40...15.60 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : SCA 14,0 h4 Edition : 12.02.90

Replaces

Test oil : ISO-4113

: 0 402 648 866 Combination no.

Injection pump

Pump designation : PE8P12OA92O/4LS7125

EP type number : 0 412 628 833

Governor

: RQV350...1050PA795-7 Governor design.

: 0 421 813 768 Governer no.

Customer-spec. information Customer : SCANIA

: DS 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5- 6-8 Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75)Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 350.0

2nd speed Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.5...1.9 100 s: (-)

cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 2nd speed

: 1.30...1.70 travel mm

3rd speed rpm : 650

: 4.10...4.70 travel mm

rpm : 1095 4th speed

travel mm : 7.80...8.00

rpm : 1215 5th speed

: 9.10...9.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1170 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

: 214.0...216.0 Del.quantity

1000 : (211.0...219.0)

: 6.00 Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 100...108

Testina:

1st rack travel in: 12.50 Speed rpm : 1090...1100

2nd rack travel in: 4.00

rpm : 1200...1230 Speed

4th rack travel in: 1350

rom : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 69...77

Testina:

Speed : 100 rpm Minimum rack trave: 10.50 : 350 Speed rpm

Rack travel in mm : 4.60...4.80

Rack travel in mm: 2.00 : 370...430 Speed rpm

Aneroid/Altitude Compensator Test

1st version Settina

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.50...13.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.60

2nd pressure hPa : 365

Rack travel in m: 12.80...12.90

3rd pressure hPa : 215

Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 950 Speed rpm

Del.quantity cm3/: 203.0...211.0

1000 s: (201.0...213.0)

Aneroid pressure h: -

rom : 500 Speed

Del.quantity cm3/: 158.0...162.0 1000 s: (156.0...164.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.50

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 240.0...290.0 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed : 350 rpm

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1990-01-11

Start of delivery - engine: 16° before TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

Note remarks

Test sheet : SCA 14,2 n1 Edition : 12.02.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 867

Injection pump

Pump designation : PE8P120A920/4LS7166

EP type number : 0 412 628 832

Governor

Governor design. : RQ750PA758-7 Governer no. : 0 421 801 490

Customer—spec. information Customer : SCANIA

Engine : DS 14

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-2-7-3-4-5-

6-8

Phasing : 0-45-90-135-180-225-

270-315

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.50...12.60

Del.guantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.7

100 s: (1.0)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700 Aneroid pressure h: 900

Del.quantity : 252.0...254.0

1000 : (249.0...257.0)

Spread cm3 : 7.00

1000 : (10.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 11.50 Speed rpm : 750...755 2nd rack travel in: 4.00 Speed rpm : 784...797

4th rack travel in: 850

Speed rpm : 0.00...1.ເປັ

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 12.50...12.60

Measurement

Speed 1/min: 500

G09

1st pressure hPa : -

Rack travel in m: 9.70...10.10

2nd pressure hPa : 365

Rack travel in m: 11.80...11.90

3rd pressure hPa : 215

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 158.0...162.0 1000 s: (156.0...164.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.50 rpm : 750...755 Speed

HIGH IDLE

1st version

Rack travel in mm : 5.00...5.20

cm3 : 4.00Spread

1000 s: (7.00)

Remarks:

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1990-01-11

Start of delivery - engine: 18° before TDC

Engine firing sequence: 1-5-4-2-6-3-7-8

APPLICATION

Generator

Generator set

Note remarks

Test sheet : SCA 14,2 m1 Edition : 12.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 868

Injection pump

Pump designation : PE8P12OA920/4LS7180

: 0 412 628 837 EP type number

Governor

Governor design: RQV350...1050PA795-8

: 0 421 813 770 Governer no.

Customer-spec. information : SCANIA Customer

: DSI 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-6-8 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 700

Rack travel in mm : 13.20...13.30

Del.guantity cm3/: 26.8...27.0

100 s: (26.5...27.3)

cm3 : 0.7Spread

100 s: (1.0)

rpm : 350.02nd speed

Rack travel in mm: 4.5...4.9 Del.quantity cm3/: 1.5...1.9 100 s: (-)

cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 2nd speed

travel mm : 1.30...1.70 rom : 650 3rd speed

: 4.10...4.70 travel mm

rpm : 1145 4th speed

: 7.80...8.00 travel mm

5th speed rpm : 1255

: 8.80...9.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1325 Speed

Rack travel in mm : 6.00...11.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rom : 700 Speed

Aneroid pressure h: 900

Del.quantity : 268.0...270.0

1000 : (265.0...273.0)

: 7.00 Spread cm3

1000 : (10.00)

RATED SPEED

1st version Control Lever

position degrees: 98...106

Testina:

1st rack travel in: 12.20 Speed rpm : 1090...1100

2nd rack travel in: 4.00

Speed rpm : 1215...1245

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 68...76

Testina:

Speed rpm : 100 Minimum rack trave: 10.30 : 350 rpm

Rack travel in mm : 4.50...4.70

Rack travel in mm : 2.00 : 370...430 Speed rom

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 900 Pressure

: 13.20...13.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.70...10.10

2nd pressure hPa : 365

Rack travel in m: 11.80...11.90

3rd pressure hPa : 215

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 1050 Speed rpm

Del.quantity cm3/: 258.0...266.0 1000 s: (256.0...268.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 158.0...162.0

1000 s: (156.0...164.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 110.0...150.0 1000 s: (-)

Rack travel in mm : 9.70...10.10

LOW IDLE

rpm : 350

Rack travel in mm : 4.50...4.70

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on 1990-01-15

Start of delivery - engine: 20° before

Engine firing sequence: 1-5-4-2-6-3-7-8

Note remarks

: MB 14,7 a20 Test sheet : 05.03.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 870

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RQV350..1050PA866-6

Governer no. : 0 421 813 810

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 A Engine

1st version kW : 260.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75)Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.4...6.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 350 : 1.40...1.60 travel mm

rpm : 800 2nd speed

: 4.80...5.10 travel mm

rpm : 1100 3rd speed

travel mm : 7.70...8.10

: 1175 4th speed rpm

: 9.00...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

> Degree: -1 rpm : 1130

Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1050Rack travel in m: 11.70...11.90 Aneroid pressure h: 1100 2nd pressure hPa : 600 Rack travel in m: 13.30...13.50 Del.quantity : 181.0...183.0 1000 : (178.0...186.0) cm3 : 5.00 1000 : (9.00) START CUT-OUT Spread 1/min: 270 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 116...124 1st version Aneroid pressure h: 1100 : 700 Testing: Speed rpm Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) Spread cm3 : 8.00 1000 s: (12.0) 1st rack travel in: 11.80 Speed rpm : 1090...1100 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Aneroid pressure h: 1100 rpm : 0.00...1.00: 1050 Speed Speed rpm Del.quantity cm3/: 152.0...154.0 * 1000 s: (149.0...157.0) LOW IDLE 1 cm3 : 8.00 Control lever Spread position degrees: 64...72 1000 s: (12.00 Aneroid pressure h: rpm : 500 Testing: Speed Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) Speed : 200 rpm Minimum rack trave: 7.50 cm3 : 8.00 Spread rpm Rack travel in mm : 5.40...6.00 1000 s: (12.0) CONSTANT REGULATION rpm : 350...550 **BREAKAWAY** Speed TORQUE CONTROL 1st version 1mm rack travel less than Dimension a mm : 1.50 Torque control curve - 1st version rpm : 1050 1st speed full load rack tr: 11.80 Rack travel in m: 12.80...12.90 d speed rpm : 700 rpm : 1090...1100 Speed 2nd speed Rack travel in m: 14.30...14.50 STARTING FUEL DELIVERY rpm : 950 3rd speed Rack travel in m: 13.50...13.60 4th speed rpm : 830 rpm : 100 Speed Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Rack travel in m: 14.30...14.50 Aneroid/Altitude Remarks: Compensator Test * = Set at reduced-delivery stop. 1st version Setting : 600 Speed rpm hPa : -Pressure Rack travel mm : 11.00...11.30 Measurement Speed 1/min: 600

1st pressure hPa : 420

Note remarks

Test sheet : MB 14,7 a18 Edition : 05.03.90

Replaces :

Test oil : ISO-4113

Combination no. : 0 402 648 871

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQ300/1050PA932 Governer no. : 0 421 801 494

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 A

1st version kW : 260.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270–315

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEF'E POSITION

Control-Lever position
Degree: -2

peed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 500

Aneroid pressure h: 650

Del.quantity : 201.0...203.0

1000 : (198.0...206.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1050 Testina: Speed rpm : 1050 Del.quantity cm3/ : 180.0...183.0 1st rack travel in: 11.80 rpm : 1095...1110 Speed 1000 s: (177.0...186.0) 2nd rack travel in: 4.00 rpm : 1170...1200 Spread cm3 : 8.00Speed 1000 s: (12.0) Aneroid pressure h: 1050 4th rack travel in: 1300 rpm : 0.00...1.50Speed : 700 Speed rpm Del.quantity cm3/: 215.0...219.0 1000 s: (212.0...222.0) LOW IDLE 1 Setting point w/out bumper spring cm3 : 8.00 rpm : 300 Spread 1000 s: (12.0) Rack travel in mm: 6.2 Aneroid pressure h: 1050 Speed rpm : 850 Del.quantity cm3/ : 206.0...210.0 Testing: : 200 Speed rom 1000 s: (203.0...213.0) Minimum rack trave: 8.00 rpm : 300 cm3 : 8.00Spread 1000 s: (12.0) Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 rpm : 380...420 Speed 1000 s: (146.0...154.0) TORQUE CONTROL Dimension a mm : 0.75 Spread cm3 : 8.00: 1050 1000 s: (12.0) 2nd speed rpm Rack travel in m: 12.80...13.00 d speed rpm : 850 3rd speed rpm Rack travel in m: 13.70...14.00 BREAKAWAY 4th speed rpm : 700 Rack travel in m: 14.40...14.60 1st version 1mm rack travel less than Aneroid/Altitude full load rack tr: 11.80 Compensator Test rpm : 1095...1110 Speed 1st version STARTING FUEL DELIVERY Setting Speed : 600 rpm hPa : 650 Speed : 100 Pressure rpm Del.quantity cm3/: 175.0...190.0 Rack travel mm : 14.10...14.30 1000 s: (171.0...194.0) Measurement 1/min: 600 Speed Remarks: ٠ 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 * Increase in control-rod travel with 2nd pressure hPa : 400 respect to setting at least 0.1 mm Rack travel in m: 13.40...13.70 3rd pressure hPa : 850 Rack travel in m: 14.20...14.30 * 4th pressure hPa : -Rack travel in m: 11.40...11.70 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

: MB 14,7 p 1 : 05.03.90 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 875

Injection pump

Pump designation : PE8P120A320LS7816-1

EP type number : 0 412 628 841

Governor

Governor design. : RQ300/1050PA717-2

: 0 421 801 439 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 LA

: 353.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-4-1 Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEF'/E POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 900

: 234.0...237.0 Del.quantity

1000 : (231.0...240.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm: 20.0 1st version Aneroid pressure h: 1600 Testina: Speed rpm : 1050 Del.quantity cm3/ : 252.0...256.0 1000 s: (249.0...259.0) 1st rack travel in: 13.30 Speed rpm : 1095...1110 2nd rack travel in: 4.00 rpm : 1150...1180 Speed cm3 : 8.00Spread 4th rack travel in: 1300 1000 s: (12.0) Speed rpm : 0.00...1.50 Aneroid pressure h: 1600 Speed rpm : 850 Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) LOW IDLE 1 Setting point w/out bumper spring : 300 cm3 : 8.00rom Spread 1000 s: (12.0) Rack travel in mm: 6.2 Aneroid pressure h: -: 500 Testina: Speed rpm Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) Speed rpm Minimum rack trave: 7.80 : 300 cm3 : 8.00Spread rpm Rack travel in mm : 5.90...6.50 1000 s: (12.0) Rack travel in mm : 2.00 rpm : 380...420 Speed BREAKAWAY TORQUE CONTROL Dimension a mm : 0.40 1st version : 1050 1mm rack travel less than 2nd speed rpm Rack travel in m: 14.30...14.50 3rd speed rpm : 850 full load rack tr: 13.30 Rack travel in m: 15.00...15.30 rpm : 1095...1110 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test rpm : 100 Speed Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0) 1st version Setting Speed : 600 rpm Pressure hPa : 900 Remarks: Rack travel mm : 13.60...13.80 Measurement * Increase in control-rod travel with 1/min: 600 respect to setting at least 0.1 mm Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050
Rack travel in m: 13.70...13.90 *
4th pressure hPa : 1350 Rack travel in m: 14.60...14.80 5th pressure hPa : -Rack travel in m: 10.20...10.50 START CUT-OUT 1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 14,7 t : 12.04.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 876

Injection pump

Pump designation : PE8P120A320LS7816 : 0 412 628 829 EP type number

Governor

Governor design. : RQ300/1050PA932-1

Governer no. : 0 421 801 509

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

: 353.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 23.4...23.7

100 s: (23.1...24.0)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5) cm3 : 0.6 Spread 100 s: (1.0)

GUIDE SLEF'/E POSITION

Control-Lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid F. Del.quantity 1000 Aneroid pressure h: 900

: 234.0...237.0 : (231.0...240.0)

: 6.00 cm3

Spread 1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm : 20.0 Testing: Spread 1st rack travel in: 13.30 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed man rpm : 1150...1180 Speed 4th rack travel in: 1300 rpm : 0.00...1.50 Speed Spread LOW IDLE 1 Setting point w/out bumper spring Speed Speed : 300 rpm Rack travel in mm: 6.2 Spread Testina: Speed rpm Minimum rack trave: 7.80 : 300 BREAKAWAY rpm Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 1st version rpm : 380...420 Speed TORQUE CONTROL : 0.40 Dimension a mm Speed : 1050 2nd speed rpm Rack travel in m: 14.30...14.50 3rd speed rpm : 850 Rack travel in m: 15.00...15.30 Speed rpm Aneroid/Altitude Compensator Test Remarks: 1st version Settina : 600 Speed rpm hPa : 900 Pressure : 13.60...13.80 Rack travel mm Measurement $1/\min : 600$ Speed 1st pressure hPa : 350 Rack travel in m: 11.10...11.30 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 Rack travel in m: 13.70...13.90 * 4th pressure hPa : 1350 Rack travel in m: 14.60...14.80 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 252.0...256.0 1000 s: (249.0...259.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1600 : 850 Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: rpm : 500 Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) cm3 : 8.001000 s: (12.0) 1mm rack travel less than full load rack tr: 13.30 rpm : 1095...1110 STARTING FUEL DELIVERY : 100 Rack travel in mm : 10.20...10.50 * Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Aneroid pressure h: 1600

rpm

: 1050

Note remarks

: MB 14,7 a17 Test sheet : 01.02.90 Edition : 1.12.89 Replaces

Test oil : ISO-4113

: 0 402 648 879 Combination no.

Injection pump

Pump designation: PE8P120A320LS7801-4

EP type number : 0 412 628 839

Governor

Governor design. : RQV350..1050PA842-5

: 0 421 813 836 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: 0M442 LA Engine

: 320.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.50...14.70

Del.quantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed

Rack travel in mm : 5.7...5.9

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.10 travel mm

2nd speed rom : 700

: 4.00...4.40 travel mm

: 1100 3rd speed rpm

: 6.80...7.20 travel mm

4th speed : 1200 rpm

travel mm : 8.30...8.70

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1185

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Rack travel in m: 15.40...15.60 Speed rpm : 600 Aneroid pressure h: 750 5th pressure hPa : 212.0...214.0 Del.quantity Rack travel in m: 11.60...11.80 1000 : (209.0...217.0) cm3 : 5.00 1000 : (9.00) START CUT-OUT Spread 1/min: 270 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 110...118 1st version Aneroid pressure h: 1250 Testing: Speed rpm : 1050 Del.quantity cm3/: 227.0...230.0 1000 s: (224.0...233.0) 1st rack travel in: 14.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 cm3 : 8.00 Spread Speed rpm: 1190...1220 4th rack travel in: 1300 1000 s: (12.0) Aneroid pressure h: 1250 rpm : 0.00...1.50 : 900 Speed Speed rpm Del.quantity cm3/: 238.0...242.0 1000 s: (235.0...245.0) LOW IDLE 1 cm3 : 8.00Control lever Spread position degrees: 66...74 1000 s: (12.0) Aneroid pressure h: 1250 Speed rpm : 1050 Del.quantity cm3/: 156.0...159.0 * 1000 s: (153.0...162.0) Testing: Speed : 100 rpm Minimum rack trave: 7.40 cm3 : 8.00 : 350 Spread rpm 1000 s: (12.0) Rack travel in mm : 5.50...6.10 Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 150.0...152.0
1000 s: (147.0...155.0) CONSTANT REGULATION rpm : 350...550 Speed TORQUE CONTROL cm3 : 8.00Spread 1000 s: (12.0) 2nd speed rpm : 1050 Rack travel in m: 15.20...15.40 3rd speed rpm : 975 Rack travel in m: 15.40...15.60 BREAKAWAY Aneroid/Altitude 1st version 1mm rack travel less than Compensator Test full load rack tr: 14.20 rpm : 1090...1100 1st version Speed Setting Speed : 600 STARTING FUEL DELIVERY rom hPa : 750 Pressure : 14.50...14.70 Rack travel mm Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0) Measurement 1/min: 600 Speed 1st pressure hPa : 400 Remarks: Rack travel in m: 12.20...12.40 2nd pressure hPa : 550 Rack travel in m: 13.60...13.80 * = Set at reduced-delivery stop. 3rd pressure hPa : 900 Rack travel in m: 14.70...14.80

4th pressure hPa : 1250

Note remarks

Test sheet : MB 14,7 a19 Edition : 02.02.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 880

Injection pump

Pump designation : PE8P120A320LS7801-1

EP type number : 0 412 628 818

Governor

Governor design. : RQ300/1050PA717

Governer no. : 0 421 801 258

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442 LA

1st version kW : 320.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

4- 1

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 22.0...22.2

100 s: (21.7...22.5)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm: 300.0

Rack travel in mm: 6.1...6.7

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.6 100 s: (1.0)

100 3. (1.0)

GUIDE SLEF'/E POSITION Control-lever position

Degree: -2 Speed rpm: 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 600 Aneroid pressure h: 680

Del.quantity : 220.0...222.0

1000 : (217.0...225.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm : 20.0 1st version Aneroid pressure h: 1150 Testina: Speed rpm : 1050 Del.quantity cm3/ : 229.0...232.0 1st rack travel in: 14.40 rpm : 1095...1110 Speed 1000 s: (226.0...235.0) 2nd rack travel in: 4.00 rpm : 1160...1190 Spread cm3 : 8.00Speed 4th rack travel in: 1300 1000 s: (12.0) rom : 0.00...1.50Aneroid pressure h: 1150 Speed Speed : 850 rpm Del.quantity cm3/: 247.0...251.0 LOW IDLE 1 1000 s: (244.0...254.0) Setting point w/out bumper spring : 300 cm3 : 8.00 Speed Spread rpm Rack travel in mm: 6.4 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 Testing: Speed : 200 rpm 1000 s: (146.0...154.0) Minimum rack trave: 8.00 : 300 Speed rpm Spread cm3 : 8.001000 s: (12.0) Rack travel in mm : 6.10...6.70 Rack travel in mm : 2.00 : 380...420 Speed rom BREAKAWAY TORQUE CONTROL : 0.90 1st version Dimension a mm : 1050 1mm rack travel less than 2nd speed rpm Rack travel in m: 15.20...15.40 3rd speed rpm : 850 full load rack tr: 14.40 Rack travel in m: 15.80...16.10 rpm : 1095...1110 Speed STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test rpm : 100 Speed Del.quantity cm3/: 200.0...220.0 1st version 1000 s: (196.0...224.0) Setting : 600 Speed rom hPa : 680 Remarks: Pressure Rack travel mm : 14.70...14.90 Measurement 1/min: 600 Speed 1st pressure hPa : 310 Rack travel in m: 12.10...12.30 2nd pressure hPa : 470 Rack travel in m: 13.70...13.90 3rd pressure hPa : 820 Rack travel in m: 14.90...15.00 4th pressure hPa : 1100 Rack travel in m: 15.90...16.00 5th pressure hPa : -Rack travel in m: 11.40...11.50 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 14,7 k 1 Edition : 06.07.90

Replaces

Test oil : ISO-4113

: 0 402 648 881 Combination no.

Injection pump

Pump designation: PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQV300..950PA797-13

: D 421 813 841 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M442 LA Engine

: 353.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order

: 8-7-2-6-3-5-4-1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6

Spread 100 s: (1.0)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.40 travel mm

: 700 2nd speed rom

: 5.50...6.00 : 1100 travel mm

3rd speed rom

: 8.30...8.80 travel mm

rpm : 1090 4th speed

travel mm : 9.70...10.20

rpm : 1190 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1000 Speed

Rack travel in mm : 16.20...18.80

FULL LOAD DELIV. AT FULL LOAD STOP

3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1500 1st version rpm : 600 Speed Aneroid pressure h: 1000 Rack travel in m: 15.60...15.80 : 254.0...256.0 Del.auantity 5th pressure hPa : -1000 : (251.0...259.0) Rack travel in m: 10.20...10.50 cm3 : 6.00 Spread 1000 : (9.00) START CUT-OUT RATED SPEED Speed 1/min : 220 (240) 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 120...128 1st version Aneroid pressure h: 1600 Testina: 1st rack travel in: 14.20 rpm : 950 Speed Del.quantity cm3/: 270.0...273.0 1000 s: (267.0...276.0) rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed Spread cm3 : 8.001000 s: (12.0) 4th rack travel in: 1150 Aneroid pressure h: 1600 rpm : 0.00...1.00Speed rpm : 800 Speed Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) LOW IDLE 1 Control lever cm3 : 8.00 position degrees: 82...90 Spread 1000 s: (12.0) Testina: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 145.0...147.0 : 200 Speed rpm Minimum rack trave: 7.80 1000 s: (142.0...150.0) : 300 rpm Rack travel in mm : 5.90...6.50 cm3 : 8.00Spread 1000 s: (12.0) CONSTANT REGULATION rpm : 300...500 Speed BREAKAWAY TORQUE CONTROL : 0.30 Dimension a mm 1st version : 950 1mm rack travel less than 2nd speed rpm Rack travel in m: 15.20...15.40 : 800 3rd speed rpm full load rack tr: 14.20 rpm : 990...1000 Rack travel in m: 15.50...15.70 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test rpm_ : 100 Speed Del.guantity cm3/: 240.0...260.0 1st version 1000 s: (236.0...264.0) Settina : 600 Speed rpm hPa : 1000 mm : 14.60...14.80 Remarks: Pressure Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 12.00...12.20 2nd pressure hPa : 700

Rack travel in m: 13.80...14.00

Note remarks

Test sheet : MB 14,7 a21 Edition : 01.02.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 882

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQV300..950PA797-14

Governer no. : 0 421 813 842

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 269.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35)

: (5.15...5.35)
Rack travel in mm : 20.00...24.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270–315

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.4

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3: 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50

2nd speed rpm : 600

travel mm : 4.80...5.30

3rd speed rpm: 950

travel mm : 7.60...8.10

4th speed rpm: 1050

travel mm : 9.00...9.50

5th speed rpm: 1100

travel mm : 9.90...10.40

GUIDE SLEEVE POSITION Control-lever position Degree: -1

Speed rpm: 990

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 500 Speed Aneroid pressure h: 800 Del.quantity : 201.0...206.0) cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testina: 1st rack travel in: 11.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 84...92 Testing: Speed rpm : 200 Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 6.00...6.40 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.30 : 950 2nd speed rpm Rack travel in m: 12.90...13.10 : 800 3rd speed rpm Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed man hPa : 800 Pressure Rack travel mm : 14.00...14.20 Measurement Speed 1/min: 600 1st pressure hPa : 350 Rack travel in m: 11.80...12.00 2nd pressure hPa : 500 Rack travel in m: 13.30...13.60

3rd pressure hPa : 950 Rack travel in m: 14.10...14.20 * 4th pressure hPa : -Rack travel in m: 10.60...11.00 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1150 rpm : 950 Speed Del.quantity cm3/: 190.0...193.0 1000 s: (187.0...196.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1150 Speed rpm : 750 Del.quantity cm3/: 216.0...219.0 1000 s: (213.0...222.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 175.0...190.0 1000 s: (171.0...194.0) Remarks: * Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MTU 14,6 a Edition : 29.05.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 648 884

Injection pump

Pump designation : PE8P120A320LS7830 EP type number : 0 412 628 844

Governor

Governor design. : RQV350..1150PA870-4

Governer no. : 0 421 813 717

Customer—spec. information Customer : MTU

Engine : 8V 183 TE92

1st version kW : 490.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50

(4.35...4.55)

Rack travel in mm : 19.50...21.00

Firing order : 8-7-2-6-3-5-

4-1

Phasing : 0-45-90-135-180-225-

270–315

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 31.0...31.2

100 s: (30.7...31.5)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 350.0

Rack travel in mm : 5.0...5.6 Del.guantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.90...2.40

2nd speed rpm : 500

travel mm : 3.00...3.50

3rd speed rpm: 800

travel mm : 4.30...4.80

4th speed rpm: 1200

travel mm : 8.30...8.90

5th speed rpm: 1250

travel mm : 9.30...10.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1275

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1150 Speed Aneroid pressure h: 2000 Deliquantity : 310.0...315.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 113...121 Testina: 1st rack travel in: 13.80 Speed rpm : 1190...1200 2nd rack travel in: 4.00 rpm : 1270...1300 Speed 4th rack travel in: 1350 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever ್ರಾಂsition degrees: 62...70 Testina: Speed rpm Minimum rack trave: 7.00 rpm Rack travel in mm : 5.00...5.60 CONSTANT REGULATION rpm : 350...600 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : -: 7.10...7.30 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : 400 Rack travel in m: 7.60...7.70 2nd pressure hPa : 1200 Rack travel in m: 11.80...12.10 START CUT-OUT

 $1/\min : 310 (330)$

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 2000 : 750 rpm Del.quantity cm3/: 303.0...313.0 1000 s: (300.0...316.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 2000 rpm : 1150 Speed Del.quantity cm3/: 240.0...243.0 * 1000 s: (237.0...246.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 120.0...122.0 1000 s: (117.0...125.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.80 rpm : 1190...1200 Speed STARTING FUEL DELIVERY : 100 Speed rom Del.quantity cm3/: 320.0...340.0 1000 s: (316.0...344.0) Remarks: * = Set at reduced-delivery stop.

Speed

Note remarks

: MB 14,7 t 1 Test sheet : 30.03.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 889

Injection pump

Pump designation: PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQ300/950PA932-2

Governer no. : 0 421 801 526

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 LA

: 362.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00 : 8-7-2-6-3-5-Firing order

4-1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.4...25.6

100 s: (25.1...25.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.9...6.5 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

> Degree: -2 rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 1000

Del.quantity

: 254.0...256.0 : (251.0...259.0) 1000

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom

Del.quantity cm3/: 270.0...273.0 Rack travel in mm: 20.0 1000 s: (267.0...276.0) Testing: cm3 : 8.00Spread 1st rack travel in: 14.20 1000 s: (12.0) rpm : 990...1005 Aneroid pressure h: 1600 Speed 2nd rack travel in: 4.00 : 800 Speed rpm rpm : 1070...1100 Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) Speed 4th rack travel in: 1150 rpm : 0.00...1.50Spread cm3 : 8.00Speed 1000 s: (12.0) LOW IDLE 1 Aneroid pressure h: rpm : 500 Setting point w/out bumper spring Speed Del.quantity cm3/: 145.0...147.0 Speed rom 1000 s: (142.0...150.0) Rack travel in mm: 6.2 cm3 : 8.00Spread 1000 s: (12.0) Testina: Speed rpm : 200 Minimum rack trave: 7.80 speed rpm : 300 Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00...6.50 **BREAKAWAY** Rack travel in mm : 2.00 1st version 1mm rack travel less than : 380...420 Speed rom full load rack tr: 14.20 TORQUE CONTROL rpm : 990...1005 : 0.90 Dimension a mm Speed : 950 2nd speed rpm Rack travel in m: 15.20...15.40 STARTING FUEL DELIVERY : 800 3rd speed rpm Rack travel in m: 15.50...15.70 Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 Aneroid/Altitude 1000 s: (236,0...264.0) Compensator Test Remarks: 1st version Setting : 600 Speed rom hPa : 1000 Pressure Rack travel mm : 14.60...14.80 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 12.20...12.40 2nd pressure hPa : 700 Rack travel in m: 13.80...14.00 3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1500 Rack travel in m: 15.60...15.80 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600

H04

Speed

rpm : 950

Note remarks

: MB 14,7 a22 Test sheet Edition : 12.04.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 890

Injection pump

Pump designation : PE8P120A320LS7801

: 0 412 628 806 EP type number

Governor

Governor design. : RQ300/950PA932-4

: 0 421 801 533 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 A

: 269.0 1st version kW Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rom: 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.0...6.4

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEFVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500Speed

Aneroid pressure h: 800

: 201.0...203.0 Del.quantity 1000 : (198.0...206.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600

Rack travel in mm: 20.0 Aneroid pressure h: 1150 : 950 Speed rpm Del.quantity cm3/: 190.0...193.0 Testing: 1st rack travel in: 11.90 Speed rpm : 990...1000 1000 s: (187.0...196.0) cm3 : 8.00 Spread 1000 s: (12.0) 2nd rack travel in: 4.00 Aneroid pressure h: 1150 rpm : 1060...1090 Speed 4th rack travel in: 1200 Speed rpm : 750 Del.quantity cm3/: 216.0...219.0 rpm : 0.00...1.50Speed 1000 s: (213.0...222.0) cm3 : 8.00LOW IDLE 1 Spread 1000 s: (12.0) Setting point w/out bumper spring Aneroid pressure h: -: 300 rpm : 500 Rack travel in mm: 6.2 Speed rpm Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) Testing: cm3 : 8.00Speed : 200 Spread rpm Minimum rack trave: 8.00 1000 s: (12.0) : 300 rpm Rack travel in mm : 6.00...6.40 Rack travel in mm : 2.00 BREAKAWAY rpm : 380...420 Speed 1st version 1mm rack travel less than TORQUE CONTROL Dimension a mm : 0.75 : 950 2nd speed rpm full load rack tr: 11.90 Rack travel in m: 12.90...13.10 Speed 3rd speed rpm : 800 Rack travel in m: 14.20...14.40 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test 1st version Setting Remarks: : 600 Speed rom hPa : 800 Pressure : 14.00...14.20 Rack travel mm Measurement $1/\min : 600$ Speed 1st pressure hPa : 350 Rack travel in m: 11.80...12.00 2nd pressure hPa : 500 Rack travel in m: 13.30...13.60 3rd pressure hPa : 950 Rack travel in m: 14.10...14.20 * 4th pressure hPa : -Rack travel in m: 10.60...11.00 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

H06

rpm : 990...1000 Speed rpm : 100 Del.quantity cm3/ : 175.0...190.0 1000 s: (171.0...194.0) * Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 18,3 L 3 : 01.02.90 : 24.11.89 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 649 810

Injection pump

Pump designation : PE10P120A320LS7809

EP type number : 0 412 629 800

Governor

Governor design. : RQV350..1050PA870-6

Governer no. : 0 421 813 766

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M443 LA Engine

: 401.0 1st version kW Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

assembly : 1 688 901 019

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 Prestroke mm

: (3.95...4.15)

Rack travel in mm : 20.00...21.00

: 10- 9- 4- 1-7 Firing order

: 0-45-72-117-144-189-216-261-288-333 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.30...14.50

Del.quantity cm3/: 21.0...21.4

100 s: (20.7...21.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Spread cm3: 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.90...2.10 travel mm

rpm : 700 2nd speed

: 4.10...4.50 travel mm

rpm : 1100 3rd speed

travel mm : 7.60...8.00

rpm : 1200 4th speed

: 9.50...9.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1100 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

4th pressure hPa : 1100 rom : 600 Speed Rack travel in m: 14.80...15.00 Aneroid pressure h: 750 Del.quantity : 210.0...214.0 5th pressure hPa : -1000 : (207.0...217.0) cm3 : 5.00 1000 : (9.00) Rack travel in m: 11.10...11.40 Spread START CUT-OUT 1/min : 270 (290) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 114...122 1st version Testing: Aneroid pressure h: 1300 : 1050 1st rack travel in: 14.10 Speed rpm Del.quantity cm3/: 224.0...226.0 Speed rpm : 1090...1100 1000 s: (221.0...229.0) 2nd rack travel in: 4.00 rpm : 1155...1185 cm3 : 8.00 Spread Speed 4th rack travel in: 1300 1000 s: (12.0) Aneroid pressure h: 1300 rpm : 0.00...1.00Speed Speed rpm : 850 Del.quantity cm3/: 232.0...236.0 LOW IDLE 1 1000 s: (229.0...239.0) Control Lever position degrees: 64...-72 cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1300 Testina: : 200 : 1050 Speed Speed rpm rpm Del.quantity cm3/: 168.0...170.0 Minimum rack trave: 8.60 : 350 1000 s: (165.0...173.0) rom cm3 : 8.00 Rack travel in mm : 6.20...6.80 Spread 1000 s: (12.0) Aneroid pressure h: -CONSTANT REGULATION rpm : 300...400 : 500 Speed Speed rpm Del.quantity cm3/: 132.0...136.0 1000 s: (129.0...139.0) TORQUE CONTROL cm3 : 8.00Dimension a mm : 0.40 Spread 1000 s: (-) : 1050 2nd speed rpm Rack travel in m: 15.10...15.30 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 BREAKAWAY Aneroid/Altitude 1st version 1mm rack travel less than Compensator Test full load rack tr: 14.10 1st version Speed rpm : 1090...1100 Setting Speed : 600 STARTING FUEL DELIVERY man Pressure hPa : 900 : 14.30...14.50 Rack travel mm : 100 Speed rpm Del.quantity cm3/: 240.0...260.0 Measurement 1000 s: (236.0...264.0) 1/min: 600 Speed 1st pressure hPa : 400 Remarks: Rack travel in m: 11.70...11.90 2nd pressure hPa : 550 Rack travel in m: 13.20...13.40 * Increase in control-rod travel with 3rd pressure hPa : 960 respect to setting at least 0.1 mm Rack travel in m: 14.40...14.50 *

Note remarks

Test sheet : MAN 18,2 j Edition : 19.06.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 649 811

Injection pump

Pump designation : PE10P120A520LS7831

EP type number

: 0 412 629 806 Governor

Governor design. : RQ300/950PA950 Governer no. : 0 421 801 520

Customer-spec. information : MAN Customer

: D 2840 LF Engine

1st version kW : 368.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina (

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm : 13.00...14.00

: 10- 9- 4- 1- - 6- 3- 5-Firing order

: 0-45-72-117-144-189-Phasing

216-261-288-333 : 0.50 (0.75)

Tolerance + - °

Time to cyl. no. : 10

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 7.90...8.10 & maximum rack tra: 13.0...14.0 Difference ° CS : 0.25...2.75

BASIC SETTING

rpm: 950 1st speed

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 5.0...5.4 Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: 108

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed Aneroid pressure h: 1000

: 229.0...231.0 Del.quantity 1000 : (226.0...234.0)

: 5.00 Spread cm3

1000 : (9,00)

RATED SPEED

1st version

Setting point: : 600 Speed rpm Rack travel in mm: 20.0 Testina: 1st rack travel in: 12.50 rpm : 995...1010 Speed 2nd rack travel in: 4.00 rpm : 1040...1070 Speed : 0.00...1.00 Speed rom LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Speed Rack travel in mm: 5.2 Testina: Speed rpm Minimum rack trave: 6.70 : 300 rpm Speed Rack travel in mm : 5.10...5.30 Rack travel in mm: 2.00 Speed rpm : 370...410 TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 950 1st speed Rack travel in m: 13.70...13.80 2nd speed rpm : 600 Rack travel in m: 13.70...13.90 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rpm hPa : 1000 Pressure : 13.50...13.60 Rack travel mm Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.70...10.90 2nd pressure hPa : 200 Rack travel in m: 11.10...11.20 3rd pressure hPa : 500 Rack travel in m: 12.70...13.00 START CUT-OUT

1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 rpm : 600 Speed Del.quantity cm3/: 222.0...228.0 1000 s: (219.0...231.0) rpm : 600 Speed Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 151.0...153.0 1000 s: (148.0...156.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.50 rpm : 995...1010 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 5.00...5.40 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : MAN-NR. 3-7014

Speed

Note remarks

: MAN 18,2 k Test sheet : 29.06.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 649 812

Injection pump

Pump designation : PE10P120A520LS7831

EP type number : 0 412 629 806

Governor

Governor design. : RQV300...950PA949

: 0 421 813 855 Governer no.

Customer-spec. information Customer : MAN

Engine : D 2840 LF

: 368.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 13.00...14.00

: 10- 9- 4- 1- - 6- 3- 5-7 Firing order

: 0-45-72-117-144-189-216-261-288-333 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 10

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.40...5.60 & maximum rack tra: 13.0...14.0 Difference ° CS : 1.25...2.75

BASIC SETTING

rpm: 950 1st speed

Rack travel in mm : 13.50...13.60

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 5.0...5.4 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6)

Spread

cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 995 1st speed

: 10.10...10.30 travel mm

rpm : 300 2nd speed

: 1.20...1.40 travel mm

rpm : 800 3rd speed

: 6.40...6.80 travel mm

: 1200 4th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1000

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed Aneroid pressure h: 1000

Del.quantity : 229.0...231.0

: (226.0...234.0) : 5.00 1000

Spread cm3

: (9.00) 1000

RATED SPEED

1st version Control lever

position degrees: 117...125

Testina:

1st rack travel in: 12.50

rpm : 990...1000

2nd rack travel in: 4.00

rpm : 1030...1060 Speed : 0.00...1.00 Speed rom

LOW IDLE 1 Control lever

position degrees: 58...66

Testing:

Speed : 100 rom Minimum rack trave: 6.70 rom

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 310...430 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 1000 Pressure

: 13.50...13.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.90 2nd pressure hPa : 200

Rack travel in m: 11.10...11.20

3rd pressure hPa : 500

Rack travel in m: 12.70...13.00

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600

Del.quantity cm3/: 222.0...228.0 1000 s: (219.0...231.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 151.0...153.0

1000 s: (148.0...156.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 170.0...190.0 1000 s: (166.0...194.0)

LOW IDLE

Speed : 300 rpm

Rack travel in mm : 5.00...5.40 Del.quantity cm3/: 17.0...23.0

1000 s: (14.0...26.0)

cm3 : 8.00 1000 s: (12.00) Spread

Remarks:

: MAN-NR. 3-7015

Note remarks

: MB 21,9 j 1 : 19.06.90 Test sheet Edition : 30.3.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 670 804

Injection pump

Pump designation: PE12P12OA320LS7813-1

: 0 412 620 811 EP type number

Governor

Governor design. : RSV350...750P0A825-5

: 0 421 833 277 Governer no.

Customer—spec. information

Customer : DAIMLER-BENZ

: OM 444 LA Engine

: 441.0 1st version kW : 1500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 16.50...16.60

Del.quantity cm3/: 28.0...28.2

100 s: (27.7...28.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.5...5.9 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...1.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed : 700 rpm

280.0...282.0 Del.quantity 1000 : (277.0...285.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 20...28

Testina:

1st rack travel in: 15.50 Speed rpm: 750...755 2nd rack travel in: 4.00

rpm : 775...788 Speed 4th rack travel in: 900

rpm : 0.30...1.70 Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.7 Speed rpm : 350 Rack travel in mm : 5.50...5.90

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10 rpm : 750...755 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : MB 22,0 d Edition : 06.04.90 : 13.12.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 670 807

Injection pump

Pump designation : PE12P12OA32OLS7814-1

: 0 412 620 819 EP type number

Governor

Governor design. : RSV375..1050P0A535-3

: 0 421 833 328 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 444 1A Engine

1st version kW : 588.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 Prestroke mm

: (4.75...4.95)

Rack travel in mm : 19.00...21.00 Firing order

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

345

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 26.2...26.5

100 s: (25.9...26.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 375.0 Rack travel in mm : 5.1...5.4 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 650 Speed Aneroid pressure h: 1100

Del.quantity : 262.0...265.0

1000 : (259.0...268.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 96...104

Testing: 1st rack travel in: 12.90 rpm : 1070...1080 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 72...80 Setting point wout bumper spring : 375 rpm Rack travel in mm: 5.2 Testing: Speed : 100 rpm Minimum rack trave: 8.00 rpm : 375 Rack travel in mm : 5.10...5.40 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 13.70...13.90 rpm : 950 2nd speed Rack travel in m: 14.20...14.40 3rd speed rpm : 850 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed rpm hPa : 1050 Pressure Rack travel mm : 13.90...14.10 Measurement 1/min: 600 Speed 1st pressure hPa : 400 Rack travel in m: 9.30...9.50 2nd pressure hPa : 650 Rack travel in m: 12.10...12.30 3rd pressure hPa : 1370 Rack travel in m: 14.10...14.30 4th pressure hPa : -Rack travel in m: 8.20...8.60 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1800 : 1030 Speed rpm Del.quantity cm3/: 261.0...264.0 1000 s: (258.0...267.0) cm3 : 8.00 Spread 1000 s: (12.) Aneroid pressure h: 1800 Speed rpm : 750 Del.quantity cm3/: 279.0...282.0 1000 s: (276.0...285.0) cm3 : 8.00Spread 1000 s: (12.00 : 500 Speed rpm Del.quantity cm3/: 130.0...132.0 1000 s: (127.0...135.0) cm3 : 8.00 1000 s: (12.00 Spread

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.90 Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 260.0...280.0 1000 s: (256.0...284.0)

Remarks:

On activation of the starting solenoid, the start position must be reached.

Observe VDT-I-420/120

1st version

Note remarks

Test sheet : SCA 11,1 k1

Edition : 12.02.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 676 808

Injection pump

Pump designation : PE6P12OA72ORS7126 EP type number : 0 412 626 815

Governor

Governor design. : RSV350...1050P1A543

: 0 421 833 310 Governer no.

Customer-spec. information

: SAAB-SCANIA Customer

: DS11 54,57 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 4.3...4.7

Del.quantity cm3/: 1.5...1.9

100 s: (-) cm3 : 0.3 Spread

100 s: (0.6)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 234.0...236.0 Del.quantity

1000 : (231.0...239.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testing:

1st rack travel in: 13.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 74...82 Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm: 3.9

Testing:

: 100 Speed rpm Minimum rack trave: 19.50 rpm : 350 Speed

Rack travel in mm : 4.30...4.50

Rack travel in mm: 2.00 rpm : 430...490 Speed

FUEL DELIVERY CHARACTERISTICS

1st version

: 1000 Speed rpm

Del.quantity cm3/: 223.0...231.0 1000 s: (221.0...233.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 275.0...325.0 1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm

Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

H19

Note remarks

Test sheet : SCA 11,1 k Edition : 12.01.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 676 809

Injection pump

Pump designation : PE6P120A720RS7126

: 0 412 626 815 EP type number

Governor

: RSV350...1050P1A543-Governor design.

: 0 421 833 325 Governer no.

Customer-spec. information Customer : SCANIA

Engine : DS11 54,57

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening.

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 23.4...23.6

100 s: (23.1...23.9)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 4.3...4.7

Del.quantity cm3/: 1.5...1.9 100 s: (-)

cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

: 234.0...236.0 Del.quantity 1000 : (231.0...239.0)

: 6.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 108...116

Testing:

1st rack travel in: 13.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 74...82

Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 3.9

Testina:

: 100 rpm Speed Minimum rack trave: 19.50 Speed rpm : 350

Rack travel in mm : 4.30...4.50

Rack travel in mm: 2.00 rpm : 430...490 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 900 Pressure

Rack travel mm : 14.10...14.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.50...10.90

2nd pressure hPa : 510

Rack travel in m: 13.00...13.10

3rd pressure hPa : 250

Rack travel in m: 11.40...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 rpm_ : 1000 Speed

Del.quantity cm3/: 223.0...231.0

1000 s: (221.0...233.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity_cm3/ : 150.0...154.0

1000 s: (148.0...156.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 275.0...325.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 4.30...4.50

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring pretoad on new delivery-valve holders to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphragm.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania on November 14, 1989

Start of delivery - engine: 16° before

Firing sequence of engine: 1-5-3-6-2-4.

Note remarks

Test sheet : SCA 14,0 i1 Edition : 12.02.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 678 813

Injection pump

Pump designation: PE8P120A920/4LS7125

EP type number : 0 412 628 833

Governor

: RSV350...1050P1A512-Governor design.

: 0 421 833 324 Governer no.

Customer-spec. information Customer : SCANIA

: DS 14 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1- 2- 7- 3- 4- 5-6- 8 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.50...13.60

Del.guantity cm3/: 21.4...21.6

100 s: (21.1...21.9)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm : 4.6...5.0 Del.quantity cm3/: 1.5...1.9

100 s: (-) cm3 : 0.3Spread

100 s: (0.6)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 214.0...216.0

1000 : (211.0...219.0)

cm3 : 6.00 Spread

: (9.00) 1000

RATED SPEED

1st version

Control lever

position degrees: 94...102

Testing:

1st rack travel in: 12.50

rpm : 1090...1100 Speed 2nd rack travel in: 4.00

rpm : 1115...1145 Speed

4th rack travel in: 1250

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 64...72

Setting point w/out bumper spring

rpm : 350 Speed Rack travel in mm: 4.2

Testina:

Speed rpm Minimum rack trave: 19.50

rpm : 350 Speed

Rack travel in mm : 4.60...4.80

Rack travel in mm : 2.00 : 430...490 Speed rom

Aneroid/Altitude Compensator Test

1st version

Settina Speed

: 500 rom hPa : 900

Pressure : 13.50...13.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.60

2nd pressure hPa : 365

Rack travel in m: 12.80...12.90 3rd pressure hPa : 215

Rack travel in m: 11.80...12.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 950

rpm

Del.quantity cm3/: 203.0...211.0 1000 s: (201.0...213.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 158.0...162.0

1000 s: (156.0...164.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.50

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 240.0...290.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 4.60...4.80

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

ADDITIONAL INFORMATION

Start-of-delivery setting with ROBO diaphraam.

For comb. with letter index see VDT-I-400/116.

For sealing see VDT-I-400/117.

Test specifications approved by Scania

on 1990-01-11

Start of delivery - engine: 16° before

Engine firing sequence: 1-5-4-2-6-3-7-8

Note remarks

Test sheet : MAN 10.0 c : 06.07.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 735 800

Injection pump

Pump designation : PES5P120A720/3LS7210

: 0 412 725 808 EP type number

Governor

Governor design. : RQV325...1000PA962K

: 0 412 725 808 Governer no.

Customer-spec. information : MAN Customer

: D2865LF03 Engine

: 235.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Lenath mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90 : (4.75...4.95) Rack travel in mm : 15.00...16.00 : 1-3-5-4-2 Firing order

: 0-72-144-216-288 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 25.7...25.9

100 s: (25.4...26.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 4.7...5.3

100 s: (4.4...5.6) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

travel mm

2nd speed rpm

: 7.70...7.90 : 325 : 2.10...2.30 travel mm

3rd speed 500 rpm

4.10...4.50 travel mm

4th speed 900 rom

: 6.40...6.80 travel mm

: 1350 5th speed man

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1140 Speed

Rack travel in mm : 15.20...17.80

Measurement 1/min: 900 FULL LOAD DELIV. AT FULL LOAD STOP Speed 1st version 1st pressure hPa : -Rack travel in m: 8.60...8.80 Speed rpm : 900 Aneroid pressure h: 1200 2nd pressure hPa : 170 : 257.0...259.0 Rack travel in m: 10.00...10.10 Del.quantity 1000 : (254.0...262.0) 3rd pressure hPa : 600 cm3 : 5.00 Rack travel in m: 11.30...11.50 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 245 (265) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 283...291 1st version Testing: 1st rack travel in: 11.70 Aneroid pressure h: 1200 rpm : 1140...1150 rpm : 1000 Speed Speed Del.quantity cm3/: 238.0...242.0 1000 s: (235.0...245.0) 2nd rack travel in: 4.00 rpm : 1140...1170 Speed 4th rack travel in: 1350 Aneroid pressure h: 1200 Speed rpm : 0.00...1.00Speed : 650 rom Del.quantity cm3/: 259.0...265.0 1000 s: (256.0...268.0) LOW IDLE 1 Aneroid pressure h: -Control Lever Speed rpm : 500 Del.quantity cm3/ : 154.0...156.0 position degrees: 240...248 1000 s: (151.0...159.0) Testina: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 5.90...6.10 **BREAKAWAY** 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 340...450 Speed full load rack tr: 11.70 rpm : 1140...1150 TORQUE CONTROL Speed Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 900 Rack travel in m: 13.10...13.20 and speed rpm : 1000 Rack travel in m: 12.60...12.80 2nd speed Speed : 100 rom Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) : 650 3rd speed rpm Rack travel in m: 12.40...12.60 : 400 LOW IDLE 4th speed rpm Rack travel in m: 11.50...11.80 Speed rpm : 300 Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 47.0...53.0 Aneroid/Altitude Compensator Test 1000 s: (44.0...56.0) Spread cm3 : 8.001000 s: (12.00) 1st version Settina rpm : 900 Remarks: Speed : MAN-NR. 3-7048 hPa : 1200 Pressure

Rack travel mm

: 13.10...13.20

Note remarks

: MAN 10,0 c1 Test sheet : 06.07.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 735 801

Injection pump

Pump designation : PES5P120A720/3LS7210

EP type number : 0 412 725 808

Governor

Governor design. : RQV325...1000PA960K

: 0 412 725 808 Governer no.

Customer-spec. information Customer : MAN

: D2865LF03 Engine

: 235.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 : (4.75...4.95) Prestroke mm

Rack travel in mm : 15.00...16.00 Firing order : 1-3-5-4-2

Firing order

Phasing : 0-72-144-216-288

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 5

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.10...13.20

Del.guantity cm3/: 25.7...25.9

100 s: (25.4...26.2)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/: 4.7...5.3

100 s: (4.4...5.6)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1045

: 9.40...9.60 travel mm

: 325 2nd speed rpm

: 1.30...1.50 travel mm

3rd speed rpm : 500

: 3.20...3.80 travel mm

900 4th speed rpm :

: 7.60...8.00 travel mm

: 1350 5th speed rom

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1110 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP 1/min: 900 Speed 1st version 1st pressure hPa : rpm : 900 Rack travel in m: 8.60...8.80 Speed Aneroid pressure h: 1200 Del.quantity : 257.0...259.0 2nd pressure hPa : 170 Rack travel in m: 10.00...10.10 1000 : (254.0...262.0) 3rd pressure hPa : 600 Rack travel in m: 11.30...11.50 : 5.00 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min : 245 (265) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 293...301 1st version Testina: 1st rack travel in: 11.70 Aneroid pressure h: 1200 : 1000 rpm : 1140...1150 Speed Speed rpm Del.quantity cm3/: 238.0...242.0 2nd rack travel in: 4.00 1000 s: (235.0...245.0) rpm : 1125...1155 Speed 4th rack travel in: 1350 Aneroid pressure h: 1200 rpm : 0.00...1.00Speed Speed rpm : 650 Del.quantity cm3/: 259.0...265.0 1000 s: (256.0...268.0) LOW IDLE 1 Aneroid pressure h: -Control Lever rpm : 500 position degrees: 249...257 Speed Del.quantity cm3/: 154.0...156.0 1000 s: (151.0...159.0) Testina: : 100 Speed rpm Minimum rack trave: 7.50 : 300 BREAKAWAY Speed rom Rack travel in mm : 5.90...6.10 1st version CONSTANT REGULATION 1mm rack travel less than rpm : 340...450 Speed full load rack tr: 11.70 rpm : 1140...1150 TORQUE CONTROL Speed Dimension a mm :? Torque control curve - 1st version STARTING FUEL DELIVERY t speed rpm : 900 Rack travel in m: 13.10...13.20 1st speed : 1000 2nd speed Speed rpm : 100 rpm Rack travel in m: 12.60...12.80 Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) 3rd speed rpm : 650 Rack travel in m: 12.40...12.60 4th speed rpm : 400 LOW IDLE Rack travel in m: 11.60...11.90 Speed : 300 rpm Rack travel in mm : 5.90...6.10 Aneroid/Altitude Compensator Test Del.quantity cm3/: 47.0...53.0 1000 s: (44.0...56.0) cm3 : 8.00 Spread 1000 s: (12,00) 1st version Settina : 900 Speed Remarks: rom hPa : 1200 Pressure : MAN-NR. 3-7049

Measurement

Rack travel mm

: 13.10...13.20

Note remarks

: CUM 5,9 W Test sheet Edition : 08.06.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 736 806

Injection pump

Pump designation : PES6P110A120RS7213

EP type number : 0 412 716 804

Governor

: RQV400...1250PA964-K : 0 421 815 252 Governor design.

Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6BTA-A

: 171.5 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 90...100

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50)

Rack travel in mm: 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 15.50...15.60

Del.quantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 400.0 2nd speed Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 3.3...3.7 100 s: (3.1...3.9)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with anvernor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 0.70...1.10 travel mm

2nd speed rpm : 400

: 1.40...1.60 travel mm

: 600 3rd speed man

: 3.00...3.20 : 1300 travel mm

4th speed rpm

: 7.20...7.40 travel mm

5th speed rpm : 1500

: 9.20...9.40 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

Del.quantity : 165.5...167.5

1000 : (163.5...169.5)

: 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 57...65 Testina: 1st rack travel in: 14.50 Speed rpm : 1295...1305 2nd rack travel in: 4.00 rpm : 1475...1505 Speed 4th rack travel in: 1600 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 11...19 Testing: Speed rpm Minimum rack trave: 7.20 rpm : 400 Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm : 1.70 Torque control curve - 1st version st speed rpm : 1250 Rack travel in m: 15.50...15.60 1st speed : 800 2nd speed rpm Rack travel in m: 14.40...14.60 : 700 3rd speed rom Rack travel in m: 13.80...14.20 Aneroid/Altitude Compensator Test 1st version Setting : 1250 Speed rpm hPa : 1200 Pressure : 15.50...15.60 Rack travel mm Measurement 1/min: 1250 Speed 1st pressure hPa : -Rack travel in m: 7.60...8.00 2nd pressure hPa : 400

Rack travel in m: 9.70...9.80

Rack travel in m: 13.40...13.80

3rd pressure hPa : 800

START CUT-OUT 1/min : 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm : 800 Del.quantity cm3/ : 177.0...181.0 1000 s: (175.0...183.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 82.5...86.5 1000 s: (80.5...88.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.50 rpm : 1295...1305 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 155.0...175.0 1000 s: (150.0...180.0) Rack travel in mm : 12.00...13.00 LOW IDLE rpm : 400 Speed Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 33.0...37.0 1000 s: (31.0...39.0) cm3 : 8.00Spread 1000 s: (12.00) Remarks: : C.D.C. # 3913440 Start-of-delivery mark 6° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 r Edition : 08.06.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 807

Injection pump

Pump designation : PES6P110A120RS7214

EP type number : 0 412 716 805

Governor

: RQV350...1100PA964-1 Governor design.

: 0 421 815 253 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CTA-A

1st version kW : 201.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar : 1.50

Overflow

quantity min. 1/h: 90...100

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

: 4.35...4.45 Prestroke mm

: (4.30...4.50)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 15.50...15.60

Del.guantity cm3/: 16.5...16.7

100 s: (16.3...16.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 400.02nd speed

Rack travel in mm : 5.4...5.6 Del.quantity cm3/ : 3.3...3.7

100 s: (3.1...3.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 350 1st speed

: 1.80...2.00 travel mm

rpm : 450 2nd speed

travel mm : 3.20...3.40

rpm : 600 3rd speed : 5.20...5.40

travel mm rpm : 1000

4th speed : 8.10...8.30 travel mm

: 1200

5th speed rpm

: 9.60...10.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

Aneroid pressure h: 1200 : 165.5...167.5 Del.quantity

1000 : (163.5...169.5)

cm3 : 5.00 1000 : (9.00) Spread RATED SPEED 1st version Control lever position degrees: 57...65 Testina: 1st rack travel in: 14.50 rpm : 1145...1155 Speed 2nd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1600 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 11...19 Testina: : 275 Speed rpm Minimum rack trave: 7.20 Speed : 400 man Rack travel in mm : 5.40...5.60 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 1100 1st speed Rack travel in m: 15.50...15.60 : 800 2nd speed rom Rack travel in m: 14.40...14.60 : 700 3rd speed rpm Rack travel in m: 13.80...14.20 Aneroid/Altitude Compensator Test 1st version Setting : 1250 Speed man hPa : 1200 Pressure : 15.50...15.60 Rack travel mm Measurement Speed $1/\min: 1250$ 1st pressure hPa : -Rack travel in m: 7.60...8.00

START CUT-OUT 1/min: 290 (300) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1200 Speed rpm: 800
Del.quantity cm3/: 177.0...181.0
1000 s: (175.0...183.0)
Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 82.5...86.5 1000 s: (80.5...88.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.50 rpm : 1145...1155 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 155.0...175.0 1000 s: (150.0...180.0) Rack travel in mm : 12.40...13.00 LOW IDLE Speed : 400 rpm Rack travel in mm : 5.40...5.60 Del.quantity cm3/: 33.0...37.0 1000 s: (31.0...39.0) Spread cm3 : 8.001000 s: (12.00) Remarks: : C.D.C. # 3916627

Start-of-delivery mark 6° cam angle after start of delivery cyl. 1

2nd pressure hPa : 400

3rd pressure hPa : 800

Rack travel in m: 9.70...9.80

Rack travel in m: 13.40...13.80

Note remarks

: MAN 11,9 t Test sheet : 06.07.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 736 808

Injection pump

Pump designation : PES6P120A720/3LS7209

EP type number : 0 412 726 837

Governor

: RQV300...1000PA962-1 Governor design.

: 0 421 815 248 Governer no.

Customer—spec. information Customer

: D2866LF06 Engine

: 309.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.80...4.90 : (4.75...4.95) Prestroke mm

Rack travel in mm : 15.00...16.00

: 6-2-4-1- 5- 3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.70...13.80

Del.guantity cm3/: 29.3...29.5

100 s: (29.0...29.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm : 4.8...5.2 Del.quantity cm3/: 2.0...2.6 100 s: (1.7...2.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

8.40...8.60 travel mm

2nd speed 300 rpm :

2.10...2.30 travel mm

: 500 3rd speed rpm

: 4.10...4.50 travel mm

4th speed : 900 rpm

6.50...6.90 travel mm

: 1350 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1140 Speed

Rack travel in mm : 15.20...17.80 Measurement 1/min: 900 Speed FULL LOAD DELIV. AT FULL LOAD STOP 1st pressure hPa : -Rack travel in m: 8.70...8.90 1st version 2nd pressure hPa : 220 Rack travel in m: 9.10...9.20 Speed rpm : 900 Aneroid pressure h: 1200 : 293.0...295.0 3rd pressure hPa : 720 Del.quantity 1000 : (290.0...298.0) Rack travel in m: 11.40...11.60 : 5.00 cm3 Spread 1000 : (9.00) START CUT-OUT 1/min : 220 (240) RATED SPEED Speed 1st version FUEL DELIVERY CHARACTERISTICS Control Lever position degrees: 284...292 1st version Aneroid pressure h: 1200 Testina: 1st rack travel in: 12.10 rpm : 1000 Del.quantity cm3/: 267.0...271.0 1000 s: (264.0...274.0) rpm : 1140...1150 Speed 2nd rack travel in: 4.00 rpm : 1125...1155 Aneroid pressure h: 1200 Speed : 750 4th rack travel in: 1300 Speed rpm Del.quantity cm3/: 282.0...288.0 rpm : 0.00...1.00Speed 1000 s: (279.0...291.0) LOW IDLE 1 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 166.0...168.0 1000 s: (163.0...171.0) Control Lever position degrees: 240...248 Testina: Speed : 100 תכיו Minimum rack trave: 6.50 BREAKAWAY rpm : 300 Rack travel in mm : 4.90...5.10 1st version 1mm rack travel less than CONSTANT REGULATION rpm : 320...440 full load rack tr: 12.10 Speed rpm : 1140...1150 Speed TORQUE CONTROL STARTING FUEL DELIVERY Dimension a mm : ? Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 13.70...13.80 rpm : 100 Speed d speed rpm : 1000 Rack travel in m: 13.00...13.20 Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) 2nd speed 3rd speed : 750 rpm Rack travel in m: 13.30...13.50 LOW IDLE 4th speed rpm : 400 rpm : 300 Speed Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0) Aneroid/Altitude Compensator Test Spread cm3 : 8.001000 s: (12.00) 1st version Setting : 900 Remarks: Speed rpm hPa : 1200 : MAN-NR. 2-7987 Pressure

Rack travel mm

: 13.70...13.80

Note remarks

: MAN 11,9 t1 Test sheet : 06.07.90 Edition

Replaces

Test oil : TSO-4113

Combination no. : 0 402 736 809

Injection pump

Pump designation : PES6P12DA72D/3LS72D9 EP type number : 0 412 726 837

EP type number

Governor

: RQV300...1000PA960-2 Governor design.

Governer no. : 0 421 815 249

Customer-spec. information Customer : MAN

: D2866LF06 Engine

: 309.0 1st version kW : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90

: (4.75...4.95)

Rack travel in mm : 15.00...16.00 : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.40...4.60 & maximum rack tra: 15.0...16.0 Difference ° CS : 1.75...3.25

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 29.3...29.5

100 s: (29.0...29.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.8...5.2 Del.quantity cm3/: 2.0...2.6

100 s: (1.7...2.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1045 1st speed

travel mm 9.60...9.80 : 300

2nd speed rpm

travel mm 1.50...1.70 500 3rd speed rpm

3.50...4.10 travel mm

rpm : 900 4th speed

travel mm : 7.70...8.10 rpm : 1350 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1100 Speed

J06

Rack travel in mm : 15.20...17.80 Measurement FULL LOAD DELIV. AT FULL LOAD STOP 1/min: 900 Speed 1st version 1st pressure hPa : -Rack travel in m: 8.70...8.90 rpm : 900 Speed 2nd pressure hPa : 220 Aneroid pressure h: 1200 : 293.0...295.0 Rack travel in m: 9.10...9.20 Del.quantity 1000 : (290.0...298.0) 3rd pressure hPa : 720 : 5.00 Rack travel in m: 11.40...11.60 Spread cm3 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 293...301 Testina: 1st version 1st rack travel in: 12.10 Aneroid pressure h: 1200 rpm : 1140...1150 rpm : 1000Speed Del.quantity cm3/: 267.0...271.0 1000 s: (264.0...274.0) 2nd rack travel in: 4.00 rpm : 1130...1160 Speed Aneroid pressure h: 1200 Speed rpm : 750 4th rack travel in: 1300 Speed rpm : 0.00...1.00Del.quantity cm3/: 282.0...288.0 1000 s: (279.0...291.0) LOW TDLE 1 Aneroid pressure h: -Control Lever Speed rpm : 500 Del.quantity cm3/: 166.0...168.0 1000 s: (163.0...171.0) position degrees: 247...255 Testina: Speed rpm : 100 Minimum rack trave: 6.50 rpm : 300 BREAKAWAY Speed Rack travel in mm : 4.90...5.10 1st version 1mm rack travel less than CONSTANT REGULATION rpm : 300...420 Speed full load rack tr: 12.10 rpm : 1140...1150 TORQUE CONTROL Speed Dimension a mm :? Torque control curve - 1st version STARTING FUEL DELIVERY 1st speed rpm : 900 Rack travel in m: 13.70...13.80 rpm : 1000 : 100 2nd speed Speed rpm Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Rack travel in m: 13.00...13.20 rpm : 750 3rd speed Rack travel in m: 13.30...13.50 : 400 LOW IDLE 4th speed rpm Rack travel in m: 10.70...11.00 rpm : 300 Speed Aneroid/Altitude Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 20.0...26.0 1000 s: (17.0...29.0) Compensator Test Spread cm3 : 8.001000 s: (12.00) 1st version Setting : 900 Speed rom Remarks: hPa : 1200 : MAN-NR. 3-7052 Pressure

Rack travel mm

: 13.70...13.80

Note remarks

Test sheet : MB 10,0 r Edition : 19.06.90 Replaces : 2.10.89 Test oil : ISO-4113

Combination no. : 0 402 745 807

Injection pump

Pump designation : PES5P120A720LS7174 : 0 412 725 806 EP type number

Governor

Governor design. : RQ300/1050PA774-2 : 0 421 801 450 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M449 A

1st version kW : 184.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order

: 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.guantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm : 6.4...7.0 Deliquantity cm3/:1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 650

Del.quantity : 196.0...198.0

1000 : (193.0...201.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed man Rack travel in mm : 20.0

Testing: 1st rack travel in: 13.40 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 6.7 Testina: : 200 Speed rpm Minimum rack trave: 8.70 : 300 rpm Rack travel in mm : 6.40...7.00 Rack travel in mm : 2.00 rpm : 370...410 Speed TORQUE CONTROL Dimension a mm : 0.40 Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 14.40...14.60 2nd speed rpm : 750 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 650 Pressure Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 12.20...12.40 2nd pressure hPa : 400 Rack travel in m: 13.50...13.70 3rd pressure hPa : 750 Rack travel in m: 14.20...14.30 * 4th pressure hPa : 850 Rack travel in m: 14.60...14.80 5th pressure hPa : -Rack travel in m: 11.90...12.20 START CUT-OUT 1/min : 220 (240) Speed

1st version Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/: 208.0...211.0 1000 s: (205.0...214.0) : 8.00 Spread cm3 1000 s: (12.0) Aneroid pressure h: 1200 Speed rpm : 750 Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 150.0...152.0 1000 s: (147.0...155.0) Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.40 rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

* Increase in control-rod travel with respect to setting at least 0.1 mm

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MB 10,0 m 3
Edition : 17.05.90
Replaces : 2.10.89
Test oil : ISO-4113

Combination no. : 0 402 745 809

Injection pump

Pump designation : PESSP120A720LS7160

EP type number : 0 412 725 802

Governor

Governor design. : RQV300..1050PA940

Governer no. : 0 421 813 824

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM449 A

1st version kW : 184.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)
Rack travel in mm : 20.00...21.00

Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm: 300.0
Rack travel in mm: 6.5...7.1

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.30

2nd speed rpm : 600 travel mm : 4.90...5.10

3rd speed rpm : 800

travel mm : 5.80...6.10

4th speed rpm : 1100

travel mm : 8.20...8.60

5th speed rpm : 1175

travel mm : 9.50...10.10

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

Speed rpm: 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 400 1st version Rack travel in m: 12.50...12.70 rpm : 600 Speed 3rd pressure hPa : 750 Aneroid pressure h: 650 Rack travel in m: 13.20...13.30 * : 196.0...198.0 Del.quantity 1000 : (193.0...201.0) 4th pressure hPa : 850 : 5.00 Rack travel in m: 13.60...13.80 cm3 Spread 1000 : (9.00) 5th pressure hPa :-Rack travel in m: 11.90...12.20 RATED SPEED START CUT-OUT 1st version Control lever 1/min: 220 (240) Speed position degrees: 117...125 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 13.60 rpm : 1090...1100 1st version Speed Aneroid pressure h: 1200 2nd rack travel in: 4.00 rpm : 1165...1195 Speed rpm : 1050 Del.quantity cm3/ : 208.0...211.0 Speed 4th rack travel in: 1250 1000 s: (205.0...214.0) Speed rpm : 0.00...1.00cm3 : 8.00 Spread LOW IDLE 1 1000 s: (12.) Aneroid pressure h: 1200 Speed rpm : 750 Control lever position degrees: 80...88 Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0) Testing: cm3 : 8.00 Speed : 200 Spread rom 1000 s: (12.00 Minimum rack trave: 8.80 Speed rpm : 500 Del.quantity cm3/ : 150.0...152.0 rpm : 300 Rack travel in mm : 6.50...7.10 1000 s: (147.0...155.0) cm3 : 8.00 CONSTANT REGULATION Spread rpm : 300...400 1000 s: (12.00 Speed TORQUE CONTROL Dimension a mm : 0.40 **BREAKAWAY** Torque control curve - 1st version rpm : 1050 1st version 1st speed Rack travel in m: 14.50...14.70 d speed rpm : 750 1mm rack travel less than 2nd speed Rack travel in m: 14.90...15.10 full load rack tr: 13.60 3rd speed rpm : 900 Speed rpm : 1090...1100 Rack travel in m: 14.70...14.90 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test Speed rpm : 100 Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) 1st version Setting rpm : 600 hPa : 650 : 600 Speed Remarks: Pressure : 13.10...13.30 Rack travel mm * Increase in control-rod travel with respect to setting at least 0.1 mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 11.20...11.40

Note remarks

Test sheet : PER 12,2 a Edition : 12.04.90 Replaces : 1.9.87 Test oil : ISO-4113

Combination no. : 0 402 746 807

Injection pump

Pump designation : PES6P120A720RS7121 EP type number : 0 412 726 804

Governor

Governor design. : RQV250...950PA793-1

Governer no. : 0 421 813 591

Customer—spec. information Customer : PERKINS

Engine : EAGLE LE

1st version kW : 300.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90 : (4.75...4.95)

Rack travel in mm : 9.00...12.00

Firing order : 1-4-2-6-3-5

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3:0.6

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 4.8...5.0 Del.quantity cm3/ : 1.3...1.7

100 s: (-) cm3 : 0.3

Spread cm3 : 0.3 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.10...1.20 2nd speed rpm : 300 travel mm : 1.70...2.00

3rd speed rpm : 500

travel mm : 3.00...3.30

4th speed rpm: 1000

travel mm : 8.20...8.40

5th speed rpm: 1070

travel mm : 9.30...9.60

GUIDE SLEEVE POSITION

Control-lever position
Degree: -1

Speed rpm: 1010

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700 Aneroid pressure h: 900 Del.quantity : 209.0...211.0 1000 : (206.0...214.0)

cm3 : 6.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 11.60 Speed rpm : 990...1000

2nd rack travel in: 4.00

Speed rpm : 1055...1085 4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 77...85

Testing:

: 100 Speed rpm Minimum rack trave: 6.30 rpm : 250

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.60...12.70 Rack travel mm

Measurement

Speed $1/\min : 500$

1st pressure hPa : -

Rack travel in m: 11.10...11.20 2nd pressure hPa : 510 Rack travel in m: 12.20...12.30

3rd pressure hPa : 350

Rack travel in m: 11.40...11.60

START CUT-OUT

1/min: 170 (190) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 160.0...164.0

1000 s: (158.0...166.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...170.0 Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 250 Rack travel in mm: 4.80...5.00 Del.quantity cm3/: 13.0...17.0

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension 3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders to 2.9...3.1 mm.

Note remarks

Test sheet : MAC 11,1 a Edition : 02.05.90 : 30.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 810

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...900PA848K

: 0 421 815 168 Governer no.

Customer-spec. information Customer : MACK TRUCKS

: E6 350 4VH Engine

: 261.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.0...4.2 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed

: 3.10...3.30 travel mm

rpm : 850 3rd speed

: 5.90...6.10 travel mm

: 1000 4th speed rpm

: 7.50...7.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 900

: 236.5...238.5 Del.quantity : (233.5...241.5)

1000

: 5.00 Spread cm3

RATED SPEED

1st version Control lever

position degrees: 53...61

Testina:

1st rack travel in: 12.90 rpm : 950...960 Speed 2nd rack travel in: 4.00

rpm : 1075...1105 Speed

4th rack travel in: 1250

rom : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testina:

Speed rpm Minimum rack trave: 5.60 : 325 Speed rom

Rack travel in mm : 4.00.. 4.20

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 13.90...14.00

2nd speed rpm : 625

Rack travel in m: 14.10...14.20

: 800 3rd speed rpm

Rack travel in m: 14.00...14.10

4th speed rpm : 500

Rack travel in m: 0.00...13.50

Aneroid/Altitude

Compensator Test

1st version

Setting

: 625 Speed rom hPa : 900 Pressure

Rack travel mm : 14.10...14.20

Measurement

 $1/\min: 625$ Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 275

Rack travel in m: 10.00...10.10 3rd pressure hPa : 570

Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 625 Del.quantity cm3/: 257.0...263.0 1000 s: (254.0...266.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 142.0...146.0

1000 s: (140.0...148.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 950...960 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 170.0...210.0

1000 s: (160.0...220.0)

Rack travel in mm : 8.50...8.90

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.00...4.20

Del.guantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

: MACK # 313GC5173P10

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1 a1 : 02.05.90 Edition : 31.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 814

Injection pump

Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA848-1K

: 0 421 815 169 Governer no.

Customer-spec. information Customer : MACK TRUCKS

: E6 300 4VH Engine

1st version kW : 224.0 : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

1.20...1.40 travel mm rpm : 450

2nd speed : 2.80...3.10 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 900

: 200.5...202.5 : (197.5...205.5) Del.quantity

1000

: 5.00 Spread cm3

RATED SPEED 1st version Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.90 Speed rpm : 900...910 2nd rack travel in: 4.00

Speed rpm : 1025...1055 4th rack travel in: 1100 rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 7...15

Testing:

Speed : 275 rpm Minimum rack trave: 6.10 Speed rpm

Rack travel in mm : 4.50.. 4.70

CONSTANT REGULATION

: 325...520 Speed rpm

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

: 850 1st speed rpm

Rack travel in m: 12.90...13.00

2nd speed rpm : 700

Rack travel in m: 13.30...13.50

rpm : 600 3rd speed

Rack travel in m: 13.50...13.70

rpm : 500 4th speed

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version Setting

: 600 Speed rpm

hPa : 900 Pressure : 13.50...13.70 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 250

Rack travel in m: 10.90...11.00

3rd pressure hPa : 475

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 700 Del.quantity cm3/ : 217.0...223.0

1000 s: (214.0...226.0)

Aneroid pressure h: 900 Speed rpm : 600

Del.quantity cm3/: 233.0...239.0 1000 s: (230.0...242.0) Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 900...910 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 195.0...235.0

1000 s: (185.0...245.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.50...4.70

Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5173P6

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 a2 Test sheet : 02.05.90 Edition Replaces : 31.10.89 : ISO-4113 Test oil

Combination no. : 0 402 746 815

Injection pump

Pump designation .: PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...850PA848-2K

: 0 421 815 170 Governer no.

Customer-spec. information : MACK TRUCKS Customer

: E6 275 4VH Engine

: 202.0 1st version kW : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.5...4.7

Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed : 2.80...3.10 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

rpm : 10004th speed

: 7.70 ... 7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 900

: 181.0...183.0 Del.quantity

1000 : (178.0...186.0)

: 5.00 Spread cm3

RATED SPEED

1st version

Control Lever

position degrees: 52...60

Testing:

1st rack travel in: 11.00 rpm : 900...910 Speed 2nd rack travel in: 4.00

Speed rpm : 1025...1055 4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW TDIF 1 Control lever

position degrees: 7...15

Testing:

Speed : 275 rom Minimum rack trave: 6.10 : 325 Speed rpm

Rack travel in mm : 4.50.. 4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 12.00...12.10

2nd speed rpm : 600

Rack travel in m: 12.60...12.70

: 700 3rd speed rpm

Rack travel in m: 12.50...12.70

rpm : 500 4th speed

Rack travel in m: 0.00...12.40

Aneroid/Altitude

Compensator Test

1st version

Settina

Speed rpm : 600 Pressure hPa : 900

Rack travel mm : 12.60...12.70

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.90

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40
3rd pressure hPa : 360
Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 600 Speed rpm

Del.quantity cm3/: 210.5...216.5 1000 s: (207.5...219.5)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 144.0...148.0 1000 s: (142.0...150.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 900...910 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0)

Rack travel in mm : 9.50...9.90

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.50...4.70

Del.guantity cm3/: 32.0...38.0

1000 s: (30.0...40.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5173P2

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 a3 Test sheet : 02.05.90 Edition : 31.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 816

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807

EP type number

Governor

: RQV325...875PA848-3K Governor design.

: 0 421 815 171 Governer no.

Customer-spec. information : MACK TRUCKS Customer

: EM6-250L 4VH Engine

1st version kW : 186.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test Lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.5...4.7

Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with anvernor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed rpm : 450

: 2.80...3.20 travel mm

: 850 3rd speed rom

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200

: 163.0...165.0

Del.quantity 1000 : (160.0...168.0)

: 5.00 cm3 Spread

RATED SPEED

1st version Control Lever

position degrees: 52...60

Testing:

1st rack travel in: 9.80 rpm : 925...935 Speed

2nd rack travel in: 4.00

rpm : 1010...1040 Speed

4th rack travel in: 1100

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 9...17

Testina:

: 275 Speed rpm Minimum rack trave: 6.10 Speed : 325 rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 10.80...10.90

rpm : 510 2nd speed

Rack travel in m: 13.00...13.20

rpm : 700 3rd speed

Rack travel in m: 11.60...11.80

4th speed rpm : 550

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

: 510 Speed rpm hPa : 1200 Pressure

: 13.00...13.20 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40 3rd pressure hPa : 435

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510
Del.quantity cm3/: 240.0...246.0
1000 s: (237.0...249.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 146.0...150.0 1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 925...935 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 165.0...205.0

1000 s: (155.0...215.0)

Rack travel in mm : 9.10...9.50

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.50...4.70

Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5173P18

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1 a4 : 02.05.90 Edition Replaces : 31,10.89 Test oil : ISO-4113

: 0 402 746 817 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

: RQV325...900PA848-4K Governor design.

: 0 421 815 173 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

: EC6 350 4VH Engine

: 261.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 15.20...15.30

Del.guantity cm3/: 25.0...25.2

100 s: (24.7...25.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7) cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

2nd speed : 450 rpm

: 3.10...3.30 travel mm

: 850 3rd speed rpm

5.90...6.10 1000 travel mm

4th speed rpm

: 7.50...7.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1200

: 250.5...252.5 Del.quantity 1000 : (247.5...255.5)

cm3 : 5.00 Spread

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 14.20 rpm : 950...960 Speed 2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

Speed : 275 rpm Minimum rack trave: 6.50 Speed rom

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.20...15.30

: 625 2nd speed rpm

Rack travel in m: 15.50...15.60

rpm : 700 3rd speed

Rack travel in m: 15.40...15.60

4th speed rpm : 500

Rack travel in m: 0.00...15.00

Aneroid/Altitude

Compensator Test

1st version

Setting

: 625 Speed rom hPa : 1200 Pressure

: 15.50...15.60 Rack travel mm

Measurement

1/min: 625 Speed

1st pressure hPa : -

Rack travel in m: 8.60...9.00

2nd pressure hPa : 280

Rack travel in m: 10.70...10.80

3rd pressure hPa : 650

Rack travel in m: 13.60...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625 Del.quantity cm3/ : 278.0...284.0

1000 s: (275.0...287.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 130.5...134.5

1000 s: (128.5...136.5)

BRFAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.20

rpm : 950...960 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...160.0

1000 s: (110.0...170.0)

Rack travel in mm : 8.60...9.00

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P14

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 a5 Test sheet : 02.05.90 Edition Replaces : 31,10,89

Test oil : ISO-4113

Combination no. : 0 402 746 818

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

: RQV325...875PA848-5K Governor design.

: 0 421 815 174 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

: EM 6 275L 4VH Engine

1st version kW : 202.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

REGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 12.20...12.30

Del.guantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 3.7...4.3 100 s: (3.5...4.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with anvernor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40

2nd speed : 450 man

: 2.80...3.10 : 850 travel mm

3rd speed man

travel mm : 6.20...6.40

: 1000 4th speed rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200

: 190.0...192.0 Del.quantity 1000 : (187.0...195.0)

: 5.00 cm3 Spread

RATED SPEED

1st version Control lever

position degrees: 52...60

Testina:

1st rack travel in: 11.20 rpm : 925...935 Speed

2nd rack travel in: 4.00 rpm : 1030...1060 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testina:

Speed rpm Minimum rack trave: 1.50 : 325 Speed rom

Raph travel in mm: 4.60.. 4.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 12.20...12.30

2nd speed

nd speed rpm : 510 Rack travel in m: 14.10...14.30

3rd speed rpm : 700

Rack travel in m: 13.20...13.40

4th speed rpm : 400

Rack travel in m: 0.00...13.80

Aneroid/Altitude

Compensator Test

1st version

Setting

: 510 Speed man hPa : 1200 Pressure

Rack travel mm : 14.10...14.30

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.60 2nd pressure hPa : 280

Rack travel in m: 10.60...10.70

3rd pressure hPa : 485

Rack travel in m: 12.70...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510 Del.quantity cm3/ : 262.5...268.5

1000 s: (259.5...271.5)

Spread cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 145.0...149.0

1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 925...935 Speed

STARTING FUEL DELIVERY

Speed rpm

Speed rpm : 100 Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 9.40...9.60

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.60...4.80

Del.quantity cm3/: 37.0...43.0 1000 s: (35.0...45.0)

cm3 : 8.00

Spread 1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P22

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 a6 : 02.05.90 Test sheet Edition Replaces : 31.10.89 : ISO-4113 Test oil

: 0 402 746 819 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number

Governor

Governor design. : RQV325...875PA848-6K

: 0 421 815 175 Governer no.

Customer-spec. information : MACK TRUCKS Customer

: EM6-225L 4VH Engine

: 165.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm: 325.02nd speed

Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with anvernor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 850 3rd speed : 6.20...6.40 travel mm

: 1000 4th speed rom

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

Del.quantity

: 158.5...160.5 : (155.5...163.5) 1000

: 5.00 Spread cm3

RATED SPEED

1st version Control lever

position degrees: 52...60

Testing:

1st rack travel in: 10.00 rpm : 925...935 Speed

2nd rack travel in: 4.00

Speed rpm : 1015...1045 4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testina:

Speed rpm Minimum rack trave: 6.20 : 325 rpm

Rack travel in mm : 4.60.. 4.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 11.00...11.10

: 510 2nd speed rpm

Rack travel in m: 13.20...13.40

rpm : 700 3rd speed

Rack travel in m: 11.80...12.00

rpm : 600 4th speed

Rack travel in m: 12.50...12.70 5th speed rpm : 350

Rack travel in m: 0.00...13.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 510 Speed man

hPa : 1200 Pressure

: 13.20...13.40 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 220

Rack travel in m: 9.70...9.80

3rd pressure hPa : 500

Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed : 510 rpm

Del.quantity cm3/: 234.0...240.0 1000 s: (231.0...243.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 131.0...135.0

1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 925...935 Speed

STARTING FUEL DELIVERY

: 100 rpm

Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0)

Rack travel in mm : 8.50...8.90

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.60...4.80

Del.quantity cm3/: 38.0...44.0 1000 s: (36.0...46.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5173P26

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1 b5 Edition : 02.05.90 : 7.10.88 Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 820

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA878K

: 0 421 815 177 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

: E6 275 4VH Engine

1st version kW : 202.0 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

x Lenath mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 18.1...18.3

100 s: (17.8...18.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

rpm : 450 2nd speed

2.80...3.10 travel mm

: 850 3rd speed rpm

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

: 181.0...183.0 Del.quantity 1000 : (178.0...186.0)

: 5.00 cm3 Spread

RATED SPEED

1st version Control lever

position degrees: 52...60

Testina:

1st rack travel in: 11.00 Speed rpm : 900...910 2nd rack travel in: 4.00

rpm : 1025...1055 Speed

4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed rom Minimum rack trave: 6.10 Speed rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 12.00...12.10

2nd speed rpm : 600

Rack travel in m: 12.60...12.70 3rd speed rpm : 700

Rack travel in m: 12.50...12.70

rpm : 500 4th speed

Rack travel in m: 0.00...12.40

Aneroid/Altitude

Compensator Test

1st version Setting

Speed : 600 man Pressure

hPa : 900

: 12.60...12.70 Rack travel mm

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.90

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40

3rd pressure hPa : 360

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600 Del.quantity cm3/ : 210.5...216.5

1000 s: (207.5...219.5) cm3 : 8.00

Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 144.0...148.0

1000 s: (142.0...150.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 900...910 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 11.30

rpm : 805 Speed

Rack travel in mm: 4.60

rpm : 300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0)

Rack travel in mm : 9.50...9.90

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.50...4.70

Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P4

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1 b
Edition : 02.05.90
Replaces : 8.4.88
Test oil : ISO-4113

Combination no. : 0 402 746 821

Injection pump

Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA878-1K

Governer no. : 0 421 815 178

Customer-spec. information

Customer : MACK TRUCKS INC.

Engine : E6 300 4VH

1st version kW : 224.0 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzie holder

assembly : 1 688 901 101

Opening .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

Spread cm3:0.5

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 4.5...4.7

Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40 2nd speed rpm : 450

travel mm : 2.80...3.10

3rd speed rpm : 850

travel mm : 6.20...6.40

4th speed rpm: 1000

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850

Aneroid pressure h: 900 Del.quantity : 200.5...202.5

Del.quantity : 200.5...202.5 1000 : (197.5...205.5)

Spread cm3 : 5.00

1st version Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.90 rpm : 900...910 Speed

2nd rack travel in: 4.00

Speed rpm : 1025...1055 4th rack travel in: 1100 Speed rpm : 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 7...15

Testing:

Speed rpm : 275 Minimum rack trave: 6.10 rbm : 325

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed

rt speed rpm : 850 Rack travel in m: 12.90...13.00

rpm : 700 2nd speed

Rack travel in m: 13.30...13.50

3rd speed rpm : 600

Rack travel in m: 13.50...13.70 h speed rpm : 500

4th speed

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version Setting

Speed : 600 rpm Pressure hPa : 900

Rack travel mm : 13.50...13.70

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.30

2nd pressure hPa : 250

Rack travel in m: 10.90...11.00

3rd pressure hPa : 475

Rack travel in m: 12.60...13.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 700 Speed rpm

Del.quantity cm3/: 217.0...223.0 1000 s: (214.0...226.0) Aneroid pressure h: 900

Speed : 600 rpm

Del.quantity cm3/: 233.0...239.0 1000 s: (230.0...242.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 900...910 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 12.00

rpm : 805 Speed

Rack travel in mm : 4.60 Speed rpm : 300.0

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0)

Rack travel in mm : 9.90...10.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P8

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 b1 Test sheet Edition : 02.05.90 : 31.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 822

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number

Governor

Governor design. : RQV325...900PA878-2K

: 0 421 815 179 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

Engine : E6 350 4VH

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 23.6...23.8

100 s: (23.3...24.1)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm : 4.0...4.2 Del.quantity cm3/: 3.2...3.8 100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

450 2nd speed rpm

3.10...3.30 travel mm

850 3rd speed rpm

travel mm : 5.90...6.10

: 1000 4th speed rpm

: 7.50...7.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 900

: 236.5...238.5 Del.quantity

1000 : (233.5...241.5) cm3 : 5.00

Spread

1st version

Control lever

position degrees: 55...63

Testing:

1st rack travel in: 12.90 rpm : 950...960 Speed

2nd rack travel in: 4.00

Speed rpm : 1075...1105

4th rack travel in: 1150 Speed rpm: 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

: 275 Speed rpm Minimum rack trave: 5.60 : 325 rom

Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 13.90...14.00

: 625 2nd speed rom

Rack travel in m: 14.10...14.20

3rd speed rpm : 800

Rack travel in m: 14.00...14.10 4th speed rpm : 500

Rack travel in m: 0.00...13.50

Aneroid/Altitude Compensator Test

1st version Settina

Speed rom

: 625 Pressure hPa : 900

Rack travel mm : 14.10...14.20

Measurement

1/min: 625 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 275

Rack travel in m: 10.00...10.10

3rd pressure hPa : 570

Rack travel in m: 12.30...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

: 625 rpm

Del.quantity cm3/: 257.0...263.0 1000 s: (254.0...266.0)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 136.0...140.0 1000 s: (134.0...142.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.90

rpm : 950...96D Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 13.00 : 805 Speed rom

Rack travel in mm: 4.10

: 300 Speed rpm

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...180.0

1000 s: (130.0...190.0)

Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.00...4.20

Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P12

Delivery-valve spring pre-tension 3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet : MAC 11,1 b2 Edition : 02.05.90 Replaces : 31.10.89 Test oil : ISO-4113

Combination no. : 0 402 746 823

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807

EP type number

Governor

: RQV325...875PA878-3K Governor design.

: 0 421 815 180 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

Engine : EM6 275L 4VH

: 202.0 1st version kW Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 19.0...19.2

100 s: (18.7...19.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 3.7...4.3 100 s: (3.5...4.5)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

travel mm : 1.20...1.40 : 450

2nd speed mar travel mm

2.80...3.10 : 850

3rd speed rpm

: 6.20...6.40 travel mm

4th speed : 1000 rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

: 190.0...192.0 Del.quantity

1000 : (187.0...195.0)

: 5.00 cm3 Spread

1st version Control lever

position degrees: 52...60

Testing:

1st rack travel in: 11.20 rpm : 925...935 Speed 2nd rack travel in: 4.00

Speed rpm: 1030...1060 4th rack travel in: 1150

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed rpm : 275 Minimum rack trave: 6.20 Speed : 325 rom

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

: 325...520 Speed rom

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 12.20...12.30

2nd speed rpm : 510

Rack travel in m: 14.10...14.30 3rd speed rpm : 700 Rack travel in m: 13.20...13.40

4th speed rpm : 400

Rack travel in m: 0.00...13.80

Aneroid/Altitude

Compensator Test

1st version

Setting

pm : 510 hPa : 1200 Speed rpm Pressure

Rack travel mm : 14.10...14.30

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.60

2nd pressure hPa : 280 Rack travel in m: 10.60...10.70

3rd pressure hPa : 485

Rack travel in m: 12.70...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510 Del.quantity cm3/ : 262.5...268.5

1000 s: (259.5...271.5)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 145.0...149.0 1000 s: (143.0...151.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed rpm : 925...935

INTERMEDIATE RATED SPEED

Rack travel in mm: 10.30 Speed rom : 805.0

Rack travel in mm: 4.70

: 300 Speed rpm

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm: 9.40...9.60

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 37.0...43.0 1000 s: (35.0...45.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P24

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 b3 : 02.05.90 Test sheet Edition : 31.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 824

Injection pump

Pump designation: PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...875PA878-4K

: 0 421 815 181 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

: EM6 225L 4VH Engine

1st version kW : 165.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.6...4.8

Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6) cm3 : 0.8

Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

rpm : 450 2nd speed

travel mm : 2.80...3.10

: 850 3rd speed rom

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 900

: 158.5...160.5 Del.quantity

1000 : (155.5...163.5)

: 5.00 : (9.00) Spread cm3 1000

1st version Control lever

position degrees: 52...60

Testina:

1st rack travel in: 10.00 rpm : 925...935 Speed 2nd rack travel in: 4.00

Speed rpm : 1015...1045

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

Speed rpm Minimum rack trave: 1.50 : 325 Speed rom

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 11.00...11.10

rpm : 510 2nd speed

Rack travel in m: 13.20...13.40

rpm : 600 3rd speed

Rack travel in m: 12.50...12.70

rpm : 700 4th speed

Rack travel in m: 11.80...12.00

rpm : 350 5th speed

Rack travel in m: 0.00...13.20

Aneroid/Altitude Compensator Test

1st version

Settina

: 510 Speed rpm hPa : 900 Pressure

Rack travel mm : 13.20...13.40

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 220

Rack travel in m: 9.70...9.80

3rd pressure hPa : 500

Rack travel in m: 12.00...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 510 Speed rpm

Del.quantity cm3/: 234.0...240.0

1000 s: (231.0...243.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400Speed

Del.quantity cm3/: 131.0...135.0

1000 s: (129.0...137.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.00

rpm : 925...935 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 10.20

rpm : 805 Speed Rack travel in mm: 4.60

rpm : 300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0)

Rack travel in mm : 8.50...8.90

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 38.0...44.0

1000 s: (36.0...46.0)

Spread cm3 : 8.001000 s: (12.00)

Remarks:

: MACK # 313GC5173-P28

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1 b6 : 02.05.90 Edition : 31.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 825

Injection pump

Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807

Governor

Governor design. : RQV325...900PA878-5K

Governer no. : 0 421 815 182

Customer-spec. information

Customer : MACK TRUCKS INC.

: E C 6 350 4VH Engine

: 261.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values _

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 25.0...25.2

100 s: (24.7...25.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

trável mm : 1.20...1.40 rpm : 450 2nd speed

: 3.10...3.30 travel mm

rpm : 850 3rd speed

: 5.90...6.10 travel mm

rpm : 1000 4th speed

: 7.50...7.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1130 Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

2nd pressure hPa : 280 Aneroid pressure h: 1200 Rack travel in m: 10.40...10.50 : 250.5...252.5 Del.quantity 1000 : (247.5...255.5) 3rd pressure hPa : 650 cm3 : 5.00 Rack travel in m: 13.30...13.70 Spread 1000 : (9.00) FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version 1st version Aneroid pressure h: 1200 Control lever : 625 position degrees: 56...64 Speed rom Del.quantity cm3/: 272.5...278.5 1000 s: (269.5...281.5) Testing: cm3 : 8.001st rack travel in: 14.00 Spread 1000 s: (12.0) rpm : 950...960 Speed 2nd rack travel in: 4.00 Aneroid pressure h: speed rpm : 1080...1110 4th rack travel in: 1200 Speed Speed rpm : 400 Del.quantity cm3/ : 130.5...134.5 1000 s: (128.5...136.5) LOW IDLE 1 Control lever BREAKAWAY position degrees: 7...15 1st version 1mm rack travel less than Testing: : 275 Speed rpm Minimum rack trave: 6.60 full load rack tr: 14.00 rpm : 950...960 : 325 Speed rpm Rack travel in mm : 4.90...5.10 INTERMEDIATE RATED SPEED Rack travel in mm : 13.70 CONSTANT REGULATION Speed rpm : 325...520 Speed rpm : 850 Rack travel in mm : 5.00 TORQUE CONTROL Speed rom Dimension a mm Torque control curve - 1st version STARTING FUEL DELIVERY : 900 1st speed rpm Rack travel in m: 15.00...15.10 2nd speed : 625 Speed : 100 rom rpm Del.guantity cm3/: 130.0...170.0 Rack travel in m: 15.40...15.50 1000 s: (120.0...180.0) rpm : 700 3rd speed Rack travel in m: 15.30...15.40 h speed rpm : 500 Rack travel in mm : 8.30...8.70 4th speed rpm Rack travel in m: 0.00...15.00 LOW IDLE Aneroid/Altitude Speed rpm Rack travel in mm: 4.90...5.10 Compensator Test Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 1st version Spread 1000 s: (12.00) Setting : 625 Speed rpm hPa : 1200 Pressure Remarks: : 15.40...15.50 : MACK # 313GC5173-P16 Rack travel mm Delivery-valve spring pre-tension 3.0...3.2 mm. Measurement 1/min: 625 Speed

1st pressure hPa :-

Rack travel in m: 8.30...8.70

Note remarks

Test sheet : MAC 11,1 b4 : 02.05.90 Edition Replaces : 31.10.89 Test oil : TSO-4113

: 0 402 746 826 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number

Governor

: RQV325...875PA878-6K Governor design.

: D 421 815 183 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

: EM6 250L 4VH Engine

1st version kW : 186.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 16.3...16.5

100 s: (16.0...16.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

rpm : 1000 4th speed

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200

Del.quantity : 163.0...165.0

1000 : (160.0...168.0)

Spread cm3 : 5.00

1st version Control Lever

position degrees: 52...60

Testing:

1st rack travel in: 9.80 rpm : 925...935 Speed 2nd rack travel in: 4.00

rpm : 1010...1040 Speed

4th rack travel in: 1100

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 9...17

Testing:

Speed rpm : 275 Minimum rack trave: 6.10 rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 10.80...10.90

2nd speed rpm : 510

Rack travel in m: 13.00...13.20 3rd speed rpm : 700 Rack travel in m: 11.60...11.80

4th speed rpm : 550

Rack travel in m: 0.00...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 510 hPa : 1200 Pressure

: 13.00...13.20 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.60...9.00

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40

3rd pressure hPa : 435

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510

Del.quantity cm3/: 240.0...246.0 1000 s: (237.0...249.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 146.0...150.0 1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 925...935 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm : 10.20

rpm : 805 Speed

Rack travel in mm: 4.60

: 300 Speed man

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 145.0...185.0

1000 s: (135.0...195.0)

Rack travel in mm : 8.60...9.00

LOW IDLE

Speed rpm: 325
Rack travel in mm: 4.50...4.70
Del.quantity cm3/: 39.0...45.0

1000 s: (37.0...47.0) Spread

cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P20

Delivery-valve spring pre-tension

 $3.0...3.2 \, \text{mm}.$

Note remarks

: MAC 11,1 d : 02.05.90 Test sheet Edition Replaces : 31.10.89 Test oil : ISO-4113

Combination no. : 0 402 746 828

Injection pump

Pump designation : PES6P120A720RS7148 : 0 412 726 810 EP type number

Governor

: RQV325...875PA878-7K Governor design.

: 0 421 815 184 Governer no.

Customer-spec, information

: MACK TRUCKS INC. Customer

Engine : EM6 300L 4VH

1st version kW : 224.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 6.00...8.00

: 1-5-3-6-2-4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.10...11.20

Del.guantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.20...1.40 travel mm

: 450 2nd speed rom : 2.50...2.80 travel mm

: 600 3rd speed rpm

: 4.10...4.30 travel mm

4th speed rpm

: 875 : 7.30...7.50 travel mm

: 1000 5th speed rpm

: 8.70...9.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1500

Del.quantity : 199.0...204.0)

Rack travel in m: 10.70...10.80 3rd pressure hPa : 710 cm3 : 5.00 Spread 1000 : (9.00) Rack travel in m: 14.40...14.80 RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever 1st version position degrees: 55...63 Aneroid pressure h: 1500 rpm : 510 Testina: Speed Del.quantity cm3/: 299.0...305.0 1000 s: (296.0...308.0) Spread cm3 : 8.00 1st rack travel in: 10.10 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1000...1030 1000 s: (12.0) Speed 4th rack travel in: 1150 Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 152.5...156.5 1000 s: (150.5...158.5) rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 7...15 **BREAKAWAY** Testing: Speed : 275 1st version rpm Minimum rack trave: 6.10 1mm rack travel less than rpm Rack travel in mm : 4.50...4.70 full load rack tr: 10.10 rpm : 915...925 Speed CONSTANT REGULATION rpm : 325...520 INTERMEDIATE RATED SPEED Speed Rack travel in mm: 11.30 TORQUE CONTROL Speed rpm Rack travel in mm: 4.60 Dimension a mm Torque control curve - 1st version Speed man 1st speed rpm : 875 Rack travel in m: 11.10...11.20 and speed rpm : 510 Rack travel in m: 16.50...16.70 STARTING FUEL DELIVERY 2nd speed rpm : 700 : 100 3rd speed Speed rpm Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0) Rack travel in m: 13.30...13.50 rpm : 600 4th speed Rack travel in m: 15.50...15.70 Rack travel in mm : 8.30...8.70 5th speed rpm : 450 Rack travel in m: 0.00...16.60 LOW IDLE rpm : 325 Aneroid/Altitude Speed Rack travel in mm : 4.50...4.70 Compensator Test Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00 1st version Spread 1000 s: (12.00) Setting rpm : 510 hPa : 1500 Speed Pressure Remarks: : 16.50...16.70 : MACK # 313GC5174-P4 Rack travel mm Delivery-valve spring pre-tension 3.0...3.2 mm. Measurement Speed 1/min: 510 1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 370

Note remarks

Test sheet : MAC 11,1 a7 : 02.05.90 Edition : 31.10.89 Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 829

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

: RQV325...1050PA848-8 Governor design.

: 0 421 815 185 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: E6-270 4VH Engine

: 201.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90) Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 3.8...4.4

100 s: (3.6...4.6)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

travel mm : 1.40...1.60

2nd speed rpm : 450

travel mm : 2.50...2.80

3rd speed rpm : 800

: 4.80...5.00 travel mm

4th speed rpm : 1050

: 7.30...7.60 travel mm

rpm : 1200 5th speed

: 9.40...9.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1210

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 1050 Speed Aneroid pressure h: 900 : 174.0...176.0 Del.quantity 1000 : (171.0...179.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 55...63 Testina: 1st rack travel in: 11.20 Speed rpm : 1090...1100 2nd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed : 275 rpm Minimum rack trave: 6.40 rpm Rack travel in mm : 4.90...5.10 CONSTANT REGULATION Speed rpm : 325...600 TORQUE CONTROL Dimension a mm :? Torque control curve – 1st version rpm : 1050 1st speed Rack travel in m: 12.20...12.30 rpm : 630 2nd speed Rack travel in m: 12.00...12.20 d speed rpm : 925 3rd speed Rack travel in m: 11.90...12.10 : 800 4th speed rpm Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 630 Speed rpm hPa : 900 Pressure : 12.00...12.10 Rack travel mm Measurement Speed $1/\min : 630$

1st pressure hPa : -Rack travel in m: 8.60...9.00 2nd pressure hPa : 270 Rack travel in m: 9.60...9.70 3rd pressure hPa : 400 Rack travel in m: 11.00...11.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 630 Speed rpm Del.quantity cm3/: 192.0...198.0 1000 s: (189.0...201.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -: 400 Speed rpm Del.quantity cm3/: 129.0...133.0 1000 s: (127.0...135.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.20 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm : 8.60...9.00 LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10
Del.quantity cm3/: 38.0...44.0
1000 s: (36.0...46.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

: MACK # 313GC5173P30

Delivery-valve spring pre-tension 3.0...3.2 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MAC 12,0 a : 02.05.90 Edition : 30.10.89 Replaces : ISO-4113 Test oil : 0 402 746 836 Combination no. Injection pump Pump designation : PES6P120A720RS7157 : 0 412 726 814 EP type number Governor : RQV325...900PA848-12 Governor design. : 0 421 815 192 Governer no. Customer-spec. information : MACK TRUCKS INC. Customer : E7 400 4VH Engine : 298.0 1st version kW : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 2 417 413 011 Overflow quantity min. 1/h: 160...170 Test nozzle holder : 1 688 901 101 assembly Openina : 207...210 pressure, bar Orifice plate : 0,6 diameter mm Test lines : 1 680 750 008 Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Test pressure, bar: 17...19 Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. BASIC SETTING 1st speed rpm: 900 Rack travel in mm : 15.50...15.60 Del.quantity cm3/: 27.2...27.4 100 s: (26.9...27.7) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.02nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 4.3...4.9 100 s: (4.1...5.1) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 325 1st speed 1.30...1.60 travel mm 500 2nd speed rpm 3.40...4.00 900 travel mm 3rd speed rpm : 6.70...6.90 travel mm : 1075 4th speed rpm : 8.40...8.90 travel mm FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 900 Aneroid pressure h: 1200 : 272.0...274.0 Del.quantity 1000 : (269.0...277.0) cm3 : 5.00 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 14.50 rpm : 940...950 2nd rack travel in: 4.00 Speed rpm : 1115...1145 4th rack travel in: 1250 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed : 275 rpm

Minimum rack trave: 1.50 rpm : 325

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION rpm : 325...500 Speed

TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 15.50...15.60 2nd speed rpm : 625 Rack travel in m: 15.30...15.50 3rd speed rpm : 500 Rack travel in m: 0.00...14.60

Aneroid/Altitude Compensator Test

1st version Setting : 900 Speed rpm hPa : 1200 Pressure : 15.50...15.60 Rack travel mm

Measurement 1/min: 900 Speed

1st pressure hPa : -Rack travel in m: 8.20...8.60 2nd pressure hPa : 225 Rack travel in m: 9.40...9.50 3rd pressure hPa : 770

Rack travel in m: 13.80...14.20

START CUT-OUT

1/min: 280 (290) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200

Speed rpm : 625 Del.quantity cm3/ : 309.0...315.0 1000 s: (306.0...318.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 166.0...170.0 1000 s: (164.0...172.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.50 rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed : 100 man

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 9.90...10.30

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 43.0...49.0 1000 s: (41.0...51.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5179-P18

Delivery-valve spring pre-tension 3.0...3.2 mm.

K19

Note remarks

: MAC 12.0 a1 : 02.05.90 Test sheet Edition Replaces : 30.10.89 : ISO-4113 Test oil

Combination no. : 0 402 746 837

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

: RQV325...900PA848-15 Governor design.

: 0 421 815 193 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

: E7 350 4VH Engine

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

(2.70...2.90)

: 9.00...12.00 : 1- 5- 3- 6- 2- 4 Rack travel in mm :

Firing order

: 0-60-120-180-240-300 Phasing

Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 22.8...23.0

100 s: (22.5...23.3)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 4.1...4.7

100 s: (3.9...4.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.30...1.60 travel mm

rpm : 500 2nd speed : 3.40...4.00 travel mm

rpm : 900 3rd speed

: 6.70...6.90 travel mm

: 1075 4th speed rom

: 8.40...8.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed Aneroid pressure h: 900

: 228.0...230.0 Del.quantity

1000 : (225.0...233.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever position degrees: 56...64 Testing: 1st rack travel in: 13.00 rpm : 950...960 Speed 2nd rack travel in: 4.00 rpm : 1100...1130 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 10...18 Testing: : 275 Speed rpm Minimum rack trave: 6.90 rpm : 325 Rack travel in mm : 5.30...5.50 CONSTANT REGULATION rpm : 325...500 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 14.00...14.10 2nd speed rpm : 625 Rack travel in m: 13.80...14.00 3rd speed rpm : 500 Rack travel in m: 0.00...13.20 Aneroid/Altitude Compensator Test 1st version Setting : 900 Speed rpm hPa : 900 Pressure Rack travel mm : 14.00...14.10 Measurement 1/min: 900 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.20 2nd pressure hPa : 225 Rack travel in m: 10.20...10.30 3rd pressure hPa : 545

Rack travel in m: 12.70...13.10

1/min: 265 (275)

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 625 Speed Del.quantity cm3/: 260.0...266.0 1000 s: (257.0...269.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 166.0...170.0 1000 s: (164.0...172.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 950...960 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 10.40...10.80 LOW IDLE rpm : 325 Speed Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) Spread cm3 : 8.001000 s: (12.00) Remarks: : MACK # 313GC5179-P2

Speed

START CUT-OUT

Note remarks

Test sheet : MAC 12,0 a7 : 02.05.90 Edition Replaces : 30.10.89 Test oil : ISO-4113

Combination no. : 0 402 746 838

Injection pump

Pump designation : PES6P120A720RS7157 : 0 412 726 814

EP type number

Governor

: RQV325...875PA848-14 Governor design.

: 0 421 815 194 Governer no.

Customer-spec. information : MACK Customer

Engine : EM7-250L 4VH

1st version kW : 187.0 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm: 10.40...10.50

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0Rack travel in mm : 4.7...4.9 Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.30...1.60 travel mm : 500 2nd speed rpm travel mm : 3.40...4.00

rpm : 900 3rd speed

travel mm : 6.70...6.90

: 1075 4th speed rpm

: 8,40,...8,90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 900

: 174.0...176.0 Del.quantity 1000 : (171.0...179.0)

Spread : 5.00 Cm3

: (9.00) 1000

RATED SPEED

1st version Control Lever position degrees: 54...62 Testina: 1st rack travel in: 9.40 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1020...1050 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 12...20 Testing: : 275 Speed rpm Minimum rack trave: 6.30 : 325 rpm Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 875 1st speed Rack travel in m: 10.40...10.50 rpm : 510 2nd speed Rack travel in m: 11.90...12.10 3rd speed rpm : 450 Rack travel in m: 0.00...11.80 Aneroid/Altitude Compensator Test 1st version Setting : 510 Speed rom hPa : 900 Pressure : 11.90...12.10 Rack travel mm Measurement 1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 7.80...8.20 2nd pressure hPa : 235 Rack travel in m: 8.80...8.90 3rd pressure hPa : 485 Rack travel in m: 10.80...11.20 START CUT-OUT

1/min: 275 (285)

fuel Delivery Characteristics

1st version
Aneroid pressure h: 900
Speed rpm : 510
Del.quantity cm3/: 244.0...250.0
1000 s: (241.0...253.0)
Spread cm3 : 8.00
1000 s: (12.0)
Speed rpm : 400
Del.quantity cm3/: 151.0...155.0
1000 s: (149.0...157.0)

BREAKAWAY
1st version

1mm rack travel less than

full load rack tr: 9.40

Speed rpm : 915...925

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...210.0 1000 s: (160.0...220.0) Rack travel in mm : 10.10...10.30

LOW IDLE

Speed rpm: 325
Rack travel in mm: 4.70...4.90
Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0) cm3 : 8.00

Spread cm3: 8.00 1000 s: (12.00)

Remarks:

: MACK # 313GC5179-P26

Speed

Note remarks

: MAC 12,0 b Test sheet Edition : 02.05.90 : 30.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 839

Injection pump

Pump designation : PES6P120A720RS7148 EP type number : 0 412 726 810

Governor

: RQV325...875PA848-19 Governor design.

: 0 421 815 199 Governer no.

Customer-spec. information : MACK Customer

: EM7 300L 4VH Engine

: 224.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 6.00...8.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 21.0...21.2

100 s: (20.7...21.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.5...4.7 Del.quantity cm3/: 4.1...4.7

100 s: (3.9...4.9)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.20...1.40 travel mm

450 2nd speed rpm travel mm

2.50...2.80 3rd speed 600 rpm

4.10...4.30 travel mm : 875 4th speed rpm

: 7.30...7.50 travel mm

: 1000 5th speed rpm

: 8.70...9.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

Del.quantity : 210.0...212.0

1000 : (207.0...215.0) Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 57...65

Testing:

1st rack travel in: 10.50 rpm : 915...925 Speed 2nd rack travel in: 4.00 : 1000...1030 Speed rom 4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 8...16

Testing:

Speed : 275 rom Minimum rack trave: 6.10 : 325 Speed rpm

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 11.50...11.60 nd speed rpm : 510 Rack travel in m: 16.00...16.20

2nd speed

: 800 3rd speed rom

Rack travel in m: 12.00...12.20

rpm : 600 4th speed

Rack travel in m: 15.10...15.30 th speed rpm : 450

5th speed

Rack travel in m: 0.00...15.70

Aneroid/Altitude Compensator Test

1st version Setting

: 510 Speed rpm Pressure hPa : 1200

Rack travel mm : 16.00...16.20

Measurement

Speed $1/\min : 510$

1st pressure hPa : -

Rack travel in m: 8.70...9.10

2nd pressure hPa : 325

Rack travel in m: 10.60...10.70

3rd pressure hPa : 815

Rack travel in m: 14.30...14.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 510 Speed

Del.quantity cm3/: 294.0...300.0 1000 s: (291.0...303.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: -: 400 Speed

rpm Del.quantity cm3/: 166.0...170.0 1000 s: (164.0...172.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.50

rpm : 915...925 Speed

STARTING FUEL DELIVERY

Speed rom : 100

Del.quantity cm3/: 165.0...185.0 1000 s: (155.0...195.0)

Rack travel in mm : 8.70...9.10

LOW IDLE

Speed rpm

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5179-P6

Delivery—valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1a12 Test sheet : 02.05.90 Edition : 30.10.89 Replaces Test oil : ISO-4113

: 0 402 746 840 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135 EP type number : 0 412 726 807

Governor

: RQV325...875PA848-18 Governor design.

: 0 421 815 198 Governer no.

Customer—spec. information Customer : MACK

: EMC6 250L 4VH Engine

1st version kW : 187.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70,..2.90)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 17.3...17.5

100 s: (17.0...17.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.5...4.7

Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.20 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

rpm : 1000 4th speed

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

: 173.0...175.0 Del.quantity

1000 : (170.0...178.0)

: 5.00 Spread cm3

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 10.20 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1010...1040 Speed

4th rack travel in: 1100 rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 9...17

Testing:

: 275 Speed rom Minimum rack trave: 1.50 Speed rpm : 325 Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 875 1st speed

Rack travel in m: 11.20...11.30

: 510 2nd speed rpm

Rack travel in m: 13.10...13.30

rpm : 700 3rd speed

Rack travel in m: 12.00...12.20

4th speed rpm : 450

Rack travel in m: 0.00...13.10

Aneroid/Altitude Compensator Test

1st version

Setting : 510 Speed rpm hPa : 1200

Pressure Rack travel mm : 13.10...13.30

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 9.10...9.50

2nd pressure hPa : 215

Rack travel in m: 10.30...10.40

3rd pressure hPa : 435

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510 Del.quantity cm3/ : 239.0...245.0 1000 s: (236.0...248.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/ : 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

Spread

ist version

1mm rack travel less than

full load rack tr: 10.20

rpm : 915...925 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0)

Rack travel in mm : 9.10...9.50

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5173-P32

Delivery-valve spring pre-tension

 $3.0...3.2 \, \text{mm}.$

BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 17...19 Note remarks : 2.75...2.85 Prestroke mm : (2.70...2.90) Test sheet : MAC 11,1 e Rack travel in mm : 12.00...13.00 Edition : 24.01.90 Firing order : 1-5-3-6-2-4 : 31.10.89 Replaces Test oil : ISO-4113 : 0 402 746 842 : 0-60-120-180-240-300 Combination no. Phasing Phasing Tolerance + - ° Injection pump : 0.50 (0.75) Pump designation : PES6P120A720RS7164 : 0 412 726 816 EP type number Time to cyl. no. Governor : RQV325...875PA848-17 Governor design. BASIC SETTING : 0 421 815 200 Governer no. 1st speed rpm: 875 Rack travel in mm : 14.90...15.00 Customer-spec. information : MACK TRUCKS Customer Del.quantity cm3/: 22.5...22.7 : EMC6 300L 4VH Engine 100 s: (22.3...22.9) 1st version kW : 200.0 : 1750 cm3 : 0.5Rated speed Spread TEST BENCH REQUIREMENTS 100 s: (0.9) rpm : 325.0Test oil 2nd speed inlet temp. °C : 38...42 Rack travel in mm: 4.6...4.8 Del.quantity cm3/: 3.9...4.5 Overflow valve 100 s: (3.7...4.7) cm3 : 0.8 : 2 417 413 011 Spread 100 s: (1.2) Overflow quantity min. 1/h: 160...170 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 101 assembly GUIDE SLEEVE TRAVEL rpm : 325 1st speed : 1.20...1.40 Openina . travel mm : 207...210 : 450 pressure, bar 2nd speed rpm : 3.00...3.40 travel mm : 850 Orifice plate 3rd speed rpm 5.90...6.10 travel mm diameter mm : 0,6 1000 4th speed rpm : 7.40...7.70 travel mm Test lines : 1 680 750 008 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -1 rpm : 1120 x Length mm : 6.00x2.00x600 Speed Rack travel in mm : 7.00...13.00 (A) Injection pump setting values FULL LOAD DELIV. AT FULL LOAD STOP Insp. values in parentheses Set equal delivery quant. 1st version per values

rpm : 875

Aneroid pressure h: 1200

Speed

BEGINNING OF DELIVERY

Del.quantity : 225.0...227.0 1000 : (223.0...229.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 54...62

Testing:

1st rack travel in: 13.90 rpm : 915...925 Speed

2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1160

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 10...18

Testing:

Speed rpm Minimum rack trave: 6.20 : 325 Speed rom

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 14.90...15.00 and speed rpm : 510
Rack travel in m: 16.90...17.10

2nd speed

3rd speed : 700 rom

Rack travel in m: 15.70...15.90

4th speed rpm : 600

Rack travel in m: 16.60...16.80 h speed rpm : 420

5th speed

Rack travel in m: 0.00...16.80

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 510 rpm hPa : 1200 Pressure

: 16.90...17.10 Rack travel mm

Measurement

 $1/\min : 510$ Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.30

2nd pressure hPa : 375

Rack travel in m: 12.70...12.80
3rd pressure hPa : 735
Rack travel in m: 15.70...16.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 510 rpm

Del.quantity cm3/: 309.0...315.0

1000 s: (306.0...318.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.90 rpm : 915...925 Speed

STARTING FUEL DELIVERY

: 100 Speed man

Del.guantity cm3/: 160.0...200.0

1000 s: (150.0...210.0)

Rack travel in mm : 10.80...11.20

LOW IDLE

Speed rpm

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MACK # 313GC5181P14

Delivery-valve spring pre-tension 3.0...3.2 mm.

L01

Note remarks

Test sheet : MAC 11,1a15 : 02.05.90 Edition : 31.10.89 Replaces Test oil : ISO-4113

: 0 402 746 846 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...850PA848-23

: 0 421 815 204 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: E6 300 4VH Engine

: 224.0 1st version kW : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values _

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm rpm : 450 2nd speed

travel mm : 2.80...3.10

rpm : 850 3rd speed

: 6.20...6.40 travel mm : 1000 4th speed rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed Aneroid pressure h: 900

: 200.0...202.0 Del.quantity

1000 : (197.0...205.0)

: 5.00 cm3 Spread

1st version Control lever

position degrees: 50...58

Testina:

1st rack travel in: 11.90 rpm : 900...910 Speed 2nd rack travel in: 4.00 rpm : 1025...1055 Speed

4th rack travel in: 1100

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed : 275 rpm Minimum rack trave: 1.50 : 325 Speed rom

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 12.90...13.00

: 700 2nd speed rpm

Rack travel in m: 13.60...13.70

rpm : 600 3rd speed

Rack travel in m: 13.80...13.90

: 500 4th speed rpm

Rack travel in m: 0.00...13.60

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rpm Pressure hPa : 900

Rack travel mm : 13.80...13.90

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 250

Rack travel in m: 11.20...11.30

3rd pressure hPa : 475

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 600 Speed

Del.quantity cm3/: 237.0...243.0 1000 s: (234.0...246.0)

cm3 : 8.00 Spread

1000 s: (12.0) Aneroid pressure h: -

rpm: : 400 Speed

Del.quantity cm3/: 154.0...158.0

1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 900...910 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0) Rack travel in mm: 10.30...10.50

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P6

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

Test sheet Edition

: MAC 11,1a16 : 02.05.90 : 31.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 847

Injection pump

Pump designation : PES6P120A720RS7135

EP type number : 0 412 726 807

Governor

Governor design. : RQV325...850PA878-8K

Governer no. : 0 421 815 205

Customer-spec. information

Customer : MACK TRUCKS

: E6 300 4VH Engine

1st version kW : 224.0 : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 20.0...20.2

100 s: (19.7...20.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed

Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

2nd speed rpm : 450

: 2.80...3.10 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

: 1000 4th speed rom

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 900

Anerous p. Del.quantity 1000 : 200.0...202.0

: (197.0...205.0)

cm3 : 5.00 Spread

1st version Control-lever

position degrees: 50...58

Testing:

1st rack travel in: 11.90 rpm : 900...910 Speed 2nd rack travel in: 4.00

Speed rpm : 1025...1055

4th rack travel in: 1100

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testina:

Speed : 275 rom Minimum rack trave: 6.10 : 325 rom

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 12.90...13.00

: 700 2nd speed rpm

Rack travel in m: 13.60...13.70

3rd speed rpm : 600

Rack travel in m: 13.80...13.90

rpm : 500 4th speed

Rack travel in m: 0.00...13.60

Aneroid/Altitude

Compensator Test

1st version Setting

: 600 Speed rom hPa : 900 Pressure

: 13.80...13.90 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 250

Rack travel in m: 11.20...11.30

3rd pressure hPa : 475

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 600
Del.quantity cm3/: 237.0...243.0
1000 s: (234.0...246.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 900...910 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 12.20 Speed : 805

rpm Rack travel in mm: 4.60

: 300 Speed rom

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 195.0...235.0

1000 s: (185.0...245.0)

Rack travel in mm : 10.30...10.50

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.50...4.70

Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) Spread cm3 : 8.00

3000 s: (12.00)

Remarks:

: MACK # 313GC5184-P8

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1a17 Test sheet : 02.05.90 Edition Replaces : 31.10.89 Test oil : ISO-4113

Combination no. : 0 402 746 848

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807

EP type number

Governor

Governor design. : RQV325...900PA878-9K

: 0 421 815 206 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

Engine : E6-350

: 261.0 1st version kW Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 24.8...25.0

100 s: (24.5...25.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

rpm : 450 2nd speed

: 3.10...3.30 travel mm

rpm : 850 3rd speed

: 5.90...6.10 travel mm

rpm : 10004th speed

: 7.50...7.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1200

: 248.5...250.5 1000 : (245.5...253.5) Del.quantity

: 5.00 Spread cm3

1st version

Control lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80 rpm : 950...960 Speed

2nd rack travel in: 4.00

rpm : 1075...1105 Speed

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

: 275 Speed rpm Minimum rack trave: 6.60 Speed rpm

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

: ? Dimension a mm

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 14.80...14.90

2nd speed rpm : 625

Rack travel in m: 15.20...15.30

: 700 3rd speed rpm

Rack travel in m: 15.00...15.10

rpm : 500 4th speed

Rack travel in m: 0.00...14.90

Anaroid/Altitude

Compensator Test

1st version

Settina

: 625 Speed rom

hPa : 1200 Pressure

Rack travel mm : 15.20...15.30

Measurement

1/min: 625 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70

2nd pressure hPa : 310

Rack travel in m: 10.20...10.30

3rd pressure hPa : 710

Rack travel in m: 13.70...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 625

Del.quantity cm3/: 271.0...277.0 1000 s: (268.0...280.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 130.5...134.5

1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 950...960 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 14.00

rpm : 850 Speed

Rack travel in mm : 5.00 Speed rpm : 300

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0 1000 s: (120.0...180.0)

Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P12

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

Test sheet : MAC 11,1a18 Edition : 02.05.90

Replaces

Test oil : ISO-4113

: 0 402 746 849 Combination no.

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

Governor design. : RQV325...850PA878-10

: 0 421 815 209 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: E6 275 4VH Engine

: 202.0 1st version kW : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed

Rack travel in mm: 4.5...4.7 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm rpm : 450

2nd speed

: 2.80...3.10 travel mm

: 850 3rd speed rpm

: 6.20...6.40 travel mm

rpm : 1000 4th speed

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

rpm : 850 Speed Aneroid pressure h: 900

Del.quantity

: 183.0...185.0 1000 : (180.0...188.0)

: 5.00 cm3

1st version Control lever

position degrees: 50...58

Testina:

1st rack travel in: 10.90 rpm : 900...910 Speed 2nd rack travel in: 4.00 rpm : 1025...1055 Speed

4th rack travel in: 1100

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed : 275 rpm Minimum rack trave: 6.10 Speed rpm : 325

Rack travel in mm : 4.50...4.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 11.90...12.90

rpm : 700 2nd speed

Rack travel in m: 12.80...12.90

: 600 3rd speed rpm

Rack travel in m: 13.00...13.10

: 500 4th speed rpm

Rack travel in m: 0.00...12.80

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 600 rpm hPa : 900 Pressure

Rack travel mm : 13.00...13.10

Measurement

Speed $1/\min : 600$

1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 225

Rack travel in m: 11.00...11.10

3rd pressure hPa : 385

Rack travel in m: 12.20...12.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

rpm : 600 Speed

Del.quantity cm3/: 219.5...225.5 1000 s: (216.5...228.5)

Spread

cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 900...910 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 11.30

: 805 Speed rpm Rack travel in mm: 4.60

: 300 Speed rpm

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 195.0...235.0 1000 s: (185.0...245.0)

Rack travel in mm : 10.30...10.50

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.50...4.70
D~l.quantity cm3/ : 32.0...38.0

1000 s: (30.0...40.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P4

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

: MAC 11.1a13 : 02.05.90 Test sheet Edition : 15.12.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 850

Injection pump

Pump designation : PES6P120A720RS7135

: 0 412 726 807 EP type number

Governor

: RQV325...900PA848-24 Governor design.

: 0 421 815 207 Governer no.

Customer-spec. information

: MACK TRUCKS INC. Customer

: E6-350 Engine

: 261.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 24.8...25.0

100 s: (24.5...25.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 100 s: (1.2) Spread

(B) Setting of injection pump with yovernor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm rpm : 450 2nd speed : 3.10...3.30 travel mm

: 850 3rd speed rpm

5.90...6.10 1000 travel mm

4th speed rpm

: 7.50...7.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

: 248.5...250.5 Del.quantity 1000 : (245.5...253.5)

: 5.00 Spread cm3

1st version Control Lever

position degrees: 56...64

Testina:

1st rack travel in: 13.80 rpm : 950...960 Speed

2nd rack travel in: 4.00

rpm : 1075...1105 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed : 275 rom Minimum rack trave: 6.60 rpm : 325

Rack travel in mm : 4.90...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 900 1st speed

Rack travel in m: 14.80...14.90

rpm : 625 2nd speed

Rack travel in m: 15.20...15.30 d speed rpm : 700

3rd speed

Rack travel in m: 15.00...15.10

rpm : 500 4th speed

Rack travel in m: 0.00...14.90

Aneroid/Altitude

Compensator Test

1st version

Setting

: 625 Speed rpm Pressure

hPa : 1200 mm : 15.20...15.30 Rack travel mm

Measurement

1/min: 625 Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.70
2nd pressure hPa : 310
Rack travel in m: 10.20...10.30

3rd pressure hPa : 710

Rack travel in m: 13.70...14.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

: 625 Speed rpm

Del.quantity cm3/: 271.0...277.0 1000 s: (268.0...280.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 130.5...134.5 1000 s: (128.5...136.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.80

rpm : 950...960 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 130.0...170.0 1000 s: (120.0...180.0)

Rack travel in mm : 8.30...8.70

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 39.0...45.0

1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5184-P10

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

: MAC 11,1a14 Test sheet : 02.05.90 Edition Replaces : 31.10.89 Test oil : ISO-4113

Combination no. : 0 402 746 851

Injection pump

Pump designation : PES6P120A720RS7135 : 0 412 726 807 EP type number

Governor

: RQV325...850PA848-25 Governor design.

: 0 421 815 208 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: E6 275 4VH Engine

1st version kW : 202.0 Rated speed : 1700

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASTC SETTING

rpm: 850 1st speed

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed Rack travel in mm: 4.4...4.6 Del.quantity cm3/: 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.20...1.40 travel mm rpm : 450 2nd speed travel mm

: 2.80...3.10 rpm : 850 3rd speed

: 6.20...6.40 travel mm

: 1000 4th speed rpm

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 900

: 183.0...185.0 Del.quantity 1000 : (180.0...188.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version 1st version Aneroid pressure h: 900 Control lever : 600 position degrees: 50...58 Speed rpm Del.quantity cm3/: 219.5...225.5 1000 s: (216.5...228.5) Testina: cm3 : 8.00 1000 s: (12.0) 1st rack travel in: 10.90 Spread rpm : 900...910 Speed 2nd rack travel in: 4.00 Aneroid pressure h: rpm : 1020...1050 rpm : 400 Speed Speed Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) 4th rack travel in: 1100 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever BREAKAWAY position degrees: 7...15 1st version 1mm rack travel less than Testina: : 275 Speed rpm Minimum rack trave: 6.00 full load rack tr: 10.90 rpm : 900...910 rpm Speed Rack travel in mm : 4.40...4.60 STARTING FUEL DELIVERY CONSTANT REGULATION rpm : 325...520 Speed Speed rpm : 100 TORQUE CONTROL Del.guantity cm3/: 195.0...235.0 1000 s: (185.0...245.0) Dimension a mm :? Torque control curve - 1st version Rack travel in mm : 9.90...10.30 rpm : 850 1st speed Rack travel in m: 11.90...12.00 LOW IDLE : 700 2nd speed rpm Rack travel in m: 12.50...12.70 : 325 Speed rpm rpm : 600 Rack travel in mm : 4.40...4.60 3rd speed Del.quantity cm3/: 32.0...38.0 1000 s: (30.0...40.0) Rack travel in m: 12.90...13.10 h speed rpm : 500 4th speed Rack travel in m: 0.00...12.80 cm3 : 8.00Spread 1000 s: (12.00) Aneroid/Altitude Remarks: Compensator Test : MACK # 313GC5184-P2 1st version Delivery-valve spring pre-tension $3.0...3.2 \, \text{mm}$. Setting : 600 Speed rpm hPa : 900 Pressure : 13.00...13.10 Rack travel mm Measurement $1/\min : 600$ Speed 1st pressure hPa : -Rack travel in m: 9.90...10.30 2nd pressure hPa : 225 Rack travel in m: 11.00...11.10 3rd pressure hPa : 385 Rack travel in m: 12.20...12.60 FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MAC 12,0 a3 : 02.05.90 Edition : 2.1.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 852

Injection pump

Pump designation : PES6P120A720RS7157 EP type number : 0 412 726 814

Governor

: RQV325...900PA909K Governor design.

: 0 421 815 210 Governer no.

Customer-spec, information Customer : MACK TRUCKS

: E7-400 Engine

: 298.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

: 0,6 diameter mm

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 15.80...15.90

Del.guantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 5.1...5.3 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

1.20...1.40 travel mm 2nd speed : 450 rpm : 2.80...3.20 travel mm

3rd speed : 650 mar

travel mm : 5.60...5.80

900 4th speed rpm

: 8.30...8.50 : 1100 travel mm

5th speed rpm

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200

: 275.0...277.0 Del.quantity 1000 : (272.0...280.0)

: 5.00 Spread cm3

1st version

Control lever

position degrees: 58...66

Testing:

1st rack travel in: 14.80

rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 1105...1135 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testina:

Speed : 275 rpm Minimum rack trave: 6.30 rpm

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.80...15.90

2nd speed rpm : 625

Rack travel in m: 15.20...15.40

: 700 3rd speed rpm

Rack travel in m: 15.40...15.60

rpm : 500 4th speed

Rack travel in m: 0.00...13.50

Aneroid/Altitude

Compensator Test

1st version Setting

: 900 Speed man hPa : 1200 Pressure

Rack travel mm : 15.80...15.90

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90

2nd pressure hPa : 325

Rack travel in m: 10.20...10.30 3rd pressure hPa : 790

Rack travel in m: 13.80...14.20

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed : 625 rpm

Del.quantity cm3/: 302.5...308.5

1000 s: (299.5...311.5)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 157.5...161.5

1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80

rpm : 940...950 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325

Rack travel in mm : 5.10...5.30 Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P6

Delivery-valve spring pre-tension

 $3.0...3.2 \, \text{mm}$.

Note remarks

: MAC 12,0 a4 : 02.05.90 Test sheet Edition Replaces : 15.12.89 Test oil : ISO-4113

Combination no. : 0 402 746 853

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

: RQV325...900PA909-1K Governor design.

: 0 421 815 211 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

Engine : E7-350

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 23.1...23.3

100 s: (22.9...23.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm 2nd speed rpm : 450

: 2.80...3.20 travel mm

3rd speed rpm : 650 : 5.60...5.80

travel mm rpm : 900 4th speed

: 8.30...8.50 travel mm

5th speed : 1100

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

: 231.5...233.5 Del.quantity

1000 : (229.5...235.5)

: 5.00 Spread cm3

1st version Control Lever

position degrees: 58...66

Testing:

1st rack travel in: 12.60 rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 1080...1110 Speed

4th rack travel in: 1200 rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

Speed : 275 rpm Minimum rack trave: 5.90 : 325 rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed rom : 325...520

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

: 900 1st speed rpm

Rack travel in m: 13.60...13.70

2nd speed rpm : 625

Rack travel in m: 13.30...13.50

3rd speed rpm : 500

Rack travel in m: 0.00...12.00

Aneroid/Altitude

Compensator Test

1st version Setting

: 900 Speed man hPa : 1200 Pressure

: 13.60...13.70 Rack travel mm

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 325

Rack travel in m: 9.40...9.50

3rd pressure hPa : 685

Rack travel in m: 12.10...12.50

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 625 Del.quantity cm3/: 263.0...269.0

1000 s: (260.0...272.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: ~

Speed rpm : 400 Del.quantity cm3/ : 153.0...157.0

1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60

rpm : 940...950 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 10.30...10.90

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0) cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P2

Note remarks

: FIA 9,5 a 1 Test sheet : 08.06.90 Edition : 15,12,89 Replaces

: ISO-4113 Test oil

: 0 402 746 857 Combination no.

Injection pump

Pump designation : PES6P120A720RS7177

: 0 412 726 823 EP type number

Governor

Governor design. : RQ275/1100PA915 : 0 421 801 478 Governer no.

Customer-spec, information

Customer : IVECO-FIAT

: 8460.41.601 Engine

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 275.0 Rack travel in mm : 5.7...5.9

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

Aneroid pressure h: 900

Aneroiu p. ... Del.quantity 1000 : 183.0...185.0 : (180.0...188.0)

cm3 : 5.00 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rom Rack travel in mm : 20.0

Testing: 1st rack travel in: 11.30

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1350

rpm : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm : 275 Rack travel in mm: 5.8

Testing:

rpm : 100 Speed Minimum rack trave: 7.30

Speed rpm : 275 Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

rpm : 330...370 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 12.60...12.70

2nd speed rpm : 600

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm hPa : 900 Pressure

: 12.30...12.40 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.70...9.80

2nd pressure hPa : 320

Rack travel in m: 11.70...11.80

3rd pressure hPa : 260
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.guantity cm3/: 119.0...121.0

1000 s: (116.0...124.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

Speed rpm_ : 100

Del.quantity cm3/: 125.0...155.0

1000 s: (121.0...159.0)

Remarks:

APPLICATION

Omnibus

L19

Note remarks

Test sheet : MB 12,0 d 3 : 12.04.90 **Edition** : 2.10.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 860

Injection pump

Pump designation : PES6P12DA72OLS7161 : 0 412 726 817 EP type number

Governor

Governor design. : RQV300..1050PA940-3

: 0 421 813 827 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M447 A

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35) Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 6

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.10...14.30

Del.guantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 6.3...6.7

Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

cm3 : 0.6Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.10...1.30 travel mm

2nd speed rpm : 600 : 4.90...5.10 travel mm

: 800 3rd speed man

: 5.90...6.20 : 1100 travel mm

4th speed rpm

: 8.10...8.50 travel mm

5th speed : 1175 rom

: 9.70...10.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1085 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

Rack travel in m: 14.20...14.30 * 1st version rom : 600 4th pressure hPa : -Speed Rack travel in m: 11.30...11.60 Aneroid pressure h: 681 : 201.0...203.0 Del.quantity 1000 : (198.0...206.0) START CUT-OUT : 5.00 Spread cm3 1/min: 220 (240) 1000 : (9.00) Speed FUEL DELIVERY CHARACTERISTICS RATED SPEED 1st version Control Lever 1st version position degrees: 117...125 Aneroid pressure h: 1200 Speed rpm : 1050 Del.quantity cm3/ : 193.0...195.0 Testing: 1000 s: (190.0...198.0) 1st rack travel in: 12.50 cm3 : 8.00 rpm : 1090...1100 Spread 1000 s: (12.0) 2nd rack travel in: 4.00 Speed rpm: 1150...1180 4th rack travel in: 1250 Aneroid pressure h: 1200 rpm : 750 Speed Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0) Speed rpm : 0.00...1.00cm3 : 8.00LOW IDLE 1 Spread 1000 s: (12.0) Control lever Aneroid pressure h: position degrees: 82...90 Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 Testing: 1000 s: (141.0...149.0) Speed : 200 rpm cm3 : 8.00 Minimum rack trave: 8.60 Spread rpm : 300 1000 s: (12.0) Rack travel in mm : 6.30...6.70 BREAKAWAY CONSTANT REGULATION rpm : 300...450 Speed 1st version 1mm rack travel less than TORQUE CONTROL Dimension a mm : 1.20 2nd speed rpm : 1050 full load rack tr: 12.50 Rack travel in m: 13.50...13.70 Speed rpm : 1090...1100 3rd speed rpm : 750 Rack travel in m: 14.70...14.90 STARTING FUEL DELIVERY Ameroid/Altitude Speed rpm : 100 Del.quantity cm3/ : 170.0...190.0 Compensator Test 1000 s: (166.0...194.0) 1st version Settina Remarks: : 600 Speed rom Pressure hPa : 680 Rack travel mm : 14.10...14.30 * Increase in control-rod travel with respect to setting at least 0.1 mm Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.40...12.60 2nd pressure hPa : 400 Rack travel in m: 13.10...13.30

3rd pressure hPa : 800

Note remarks

: MAC 11,1 f1 Test sheet : 02.05.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 861

Injection pump

Pump designation : PES6P120A720RS7183

: 0 412 726 825 EP type number

Governor

: RQV325...875PA848-26 Governor design.

: 0 421 815 212 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EM 6-300L Engine

: 183.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 6.00...8.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.02nd speed

Rack travel in mm: 4.7...4.9

Del.quantity cm3/: 4.1...4.7 100 s: (3.9...4.9)

cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

rpm : 325 1st speed

: 1.20...1.40 travel mm

: 450 2nd speed rpm

: 2.50...2.80 travel mm

: 600 3rd speed rpm

: 4.10...4.30 travel mm

4th speed : 875 rpm

: 6.90...7.10 travel mm

: 1000 5th speed rpm

: 8.20...8.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1500

Del.quantity : 209.0...214.0)

Spread cm3 : 5.001000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 10.20 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1000...1030 Speed 4th rack travel in: 1150 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 10...18 Testing: : 275 Speed rpm Minimum rack trave: 6.30 : 325 Speed rpm Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 875 Rack travel in m: 11.20...11.30 d speed rpm : 510 2nd speed Rack travel in m: 16.60...16.80 : 700 3rd speed rpm Rack travel in m: 13.20...13.40 : 600 4th speed rpm Rack travel in m: 15.20...15.60 : 420 5th speed rpm Rack travel in m: 0.00...16.60 Aneroid/Altitude Compensator Test 1st version Setting : 510 rpm : 510 hPa : 1500 Speed Pressure : 16.60...16.80 Rack travel mm Measurement

1/min: 510 Speed 1st pressure hPa : -Rack travel in m: 8.70...9.10 2nd pressure hPa : 435

Rack travel in m: 10.80...11.00 3rd pressure hPa : 795 Rack travel in m: 14.60...15.00 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500 Speed rpm : 510
Del.quantity cm3/: 308.0...314.0
1000 s: (305.0...317.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 154.0...158.0 1000 s: (152.0...160.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 915...925 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0) Rack travel in mm : 8.70...9.10 LOW IDLE Speed rom Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) Spread cm3: 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5174-P6

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

Test sheet : MAC 11.1 f : 02.05.90 Edition Replaces : 28.9.89 : ISO-4113 Test oil

Combination no. : 0 402 746 862

Injection bumb

Pump designation : PES6P120A720RS7183 : 0 412 726 825

EP type number

Governor

: RQV325...875PA878-11 Governor design.

: D 421 815 213 Governer no.

Customer-spec, information

Customer : MACK TRUCKS

: EM 6-300L Engine

1st version kW : 183.0 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Lenath mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ___

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 6.00...8.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 11.20...11.30

Del.guantity cm3/: 20.9...21.1

100 s: (20.6...21.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0 Rack travel in mm : 4.6...4.8 Del.quantity cm3/: 4.1...4.7

100 s: (3.9...4.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

1.20...1.40 travel mm rpm : 450 2nd speed

: 2.50...2.80 travel mm

3rd speed rpm : 600 : 4.10...4.30 travel mm

rpm : 875 4th speed

: 7.30...7.50 travel mm

: 1000 5th speed rpm

: 8.70...9.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : .875 Aneroid pressure h: 1500

Del.quantity : 209.0...211.0

1000 : (206.0...214.0)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 55...63 1st version Testina: 1st rack travel in: 10.20 rpm : 915...925 Speed 2nd rack travel in: 4.00 Spread rpm : 1000...1030 Speed 4th rack travel in: 1150 rom : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 **BREAKAWAY** Testing: Speed rpm : 275 Minimum rack trave: 6.30 1st version : 325 rom Rack travel in mm : 4.60...4.80 Speed CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Speed rpm Dimension a mm Torque control curve - 1st version Speed rom rpm : 875 1st speed Rack travel in m: 11.20...11.30 2nd speed rom : 510 Rack travel in m: 16.60...16.80 : 700 3rd speed rom Speed rpm Rack travel in m: 13.30...13.50 : 600 4th speed rpm Rack travel in m: 15.50...15.70 : 450 5th speed rpm Rack travel in m: 0.00...16.60 LOW IDLE Aneroid/Altitude Compensator Test 1st version Spread Setting Speed : 510 rpm hPa : 1500 Remarks: Pressure : 16.60...16.80 Rack travel mm Delivery-valve spring pre-tension Measurement 1/min: 510 $3.0...3.2 \, \text{mm}.$ Speed

Rack travel in m: 10.80...11.00 3rd pressure hPa : 795 Rack travel in m: 14.60...15.00 FUEL DELIVERY CHARACTERISTICS Aneroid pressure h: 1500 Speed rpm : 510
Del.quantity cm3/: 308.0...314.0
1000 s: (305.0...317.0) cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/ : 154.0...158.0 1000 s: (152.0...160.0) 1mm rack travel less than full load rack tr: 10.20 rpm : 915...925 INTERMEDIATE RATED SPEED Rack travel in mm : 11.20 Rack travel in mm: 4.70 STARTING FUEL DELIVERY Del.quantity cm3/: 165.0...205.0 1000 s: (160.0...210.0) Rack travel in mm : 8.70...9.10 Speed rpm : 325 Rack travel in mm : 4.60...4.80 Del.quantity cm3/: 41.0...47.0 1000 s: (39.0...49.0) cm3 : 8.001000 s: (12.00) : MACK # 313GC5174-P8

1st pressure hPa : -

2nd pressure hPa : 435

Rack travel in m: 8.70...9.10

Note remarks

: MAC 11,1 e1 Test sheet : 02.05.90 Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 864

Injection pump

Pump designation : PES6P120A720RS7164 : 0 412 726 816 EP type number

Governor

: RQV325...900PA878-12 Governor design.

: 0 421 815 215 Governer no.

Customer-spec. information : MACK TRUCKS Customer

Engine : EC6-350 4VH

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

: 0,6 diameter mm

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)

Rack travel in mm : 12.00...13.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 16.00...16.10

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.3...4.5 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm 2nd speed rpm : 450

: 3.00...3.40 travel mm

: 850 3rd speed man

: 5.90...6.10 travel mm

rpm : 1000 4th speed

: 7.40...7.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1200

: 255.5...257.5 Del.quantity

1000 : (252.5...260.5)

: 5.00 cm3 Spread : (9.00) 1000

RATED SPEED 1st version Control Lever position degrees: 55...63 Testina: 1st rack travel in: 15.00 rpm : 950...960 2nd rack travel in: 4.00 rpm : 1115...1145 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control Lever position degrees: 10...18 Testina: Speed rpm Minimum rack trave: 5.90 : 325 rpm Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version rpm : 900 1st speed Rack travel in m: 16.00...16.10 rpm : 625 2nd speed Rack travel in m: 16.50...16.70 3rd speed rpm : 550 Rack travel in m: 0.00...16.40 Aneroid/Altitude Compensator Test 1st version Setting : 625 Speed rom hPa : 1200 Pressure : 16.50...16.70 Rack travel mm Measurement Speed 1/min: 625

1st pressure hPa : -Rack travel in m: 9.40...9.80 2nd pressure hPa : 265 Rack travel in m: 11.30...11.40 3rd pressure hPa : 665 Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1200 Speed rpm : 625 Del.quantity cm3/: 280.0...286.0 1000 s: (277.0...289.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.guantity cm3/: 141.5...145.5 1000 s: (139.5...147.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.00 rpm : 950...960 Speed

INTERMEDIATE RATED SPEED Rack travel in mm : 13.70 rpm : 850 Speed Rack travel in mm : 5.00 Speed rpm

STARTING FUEL DELIVERY

: 100 Speed rpm Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0)

Rack travel in mm : 9.40...9.80

LOW IDLE

Speed rpm

Rack travec in mm : 4.30...4.50 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P12

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 11,1 e2 : 02.05.90 Test sheet Edition : 28.9.89 Replaces : ISO-4113 Test oil

: 0 402 746 865 Combination no.

Injection pump

Pump designation : PES6P120A720RS7164 : 0 412 726 816

EP type number

Governor design.

Governor

: RQV325...875PA878-13

: 0 421 815 216 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EM6-275L 4VH Engine

1st version kW : 205.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 12.00...13.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 19.3...19.5

100 s: (19.1...19.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...5.1

Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm

rpm : 450 2nd speed

: 2.80...3.10 travel mm

rpm : 850 3rd speed

: 6.20...6.40 travel mm

rpm : 1000 4th speed

travel mm : 7.70...7.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

1000 : (191.5...195.5) 1000 : (191.5...197.5) Del.quantity

: 3.00 Spread cm3 : (9.00) 1000

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1st version Control lever

position degrees: 57...65

Testing:

1st rack travel in: 12.60 Speed rpm : 915...925 2nd rack travel in: 4.00 rpm : 1045...1075 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testina:

: 275 Speed rpm Minimum rack trave: 6.20 rpm : 325

Rack travel in mm : 4.70...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

rpm : 875 1st speed

Rack travel in m: 13.60...13.70

2nd speed

nd speed rpm : 510 Rack travel in m: 15.40...15.60

: 750 3rd speed rpm

Rack travel in m: 13.90...14.20

rpm : 600 4th speed

Rack travel in m: 15.10...15.30

5th speed rpm : 420

Rack travel in m: 0.00...15.20

Aneroid/Altitude Compensator Test

1st version

Setting

: 510 Speed rom hPa : 1200 Pressure

: 15.40...15.60 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 10.70...11.10

2nd pressure hPa : 265

Rack travel in m: 12.10...12.20

3rd pressure hPa : 450

Rack travel in m: 14.20...14.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed rpm : 510

Del.quantity cm3/: 261.0...267.0 1000 s: (259.0...269.0)

cm3 : 8.00 Spread

1000 s: (12.0) Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 152.0...156.0

1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60 rpm : 915...925 Speed

INTERMEDIATE RATED SPEED Rack travel in mm : 12.70 Speed

rpm : 805 : 300 Speed rpm

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 185.0...225.0 1000 s: (175.0...235.0)

Rack travel in mm : 10.70...11.10

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.70...5.10 Del.quantity cm3/: 39.0...45.0

1000 s: (37.0...47.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P8

Delivery-valve spring pre-tension

 $3.0...3.2 \, \text{mm}$.

Note remarks

Test sheet : MAC 12.0 a5 : 24.02.90 Edition Replaces : 28.9.89 : ISO-4113 Test oil

Combination no. : 0 402 746 866

Injection pump

Pump designation : PES6P120A720RS7157 : D 412 726 814 EP type number

Governor

Governor design: RQV325...875PA909-2K

: 0 421 815 217 Governer no.

Customer-spec. information Customer : MACK TRUCKS

: EM7-300L Engine

: 224.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke nm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 12.60...12.70

Del.guantity cm3/: 21.1...21.3

100 s: (20.9...21.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

1.20...1.40 travel mm : 450

2nd speed rpm

: 2.80...3.20 travel mm rpm : 6503rd speed

: 5.60...5.80 travel mm

rpm : 900 4th speed

: 8.30...8.50 travel mm

: 1100 5th speed rpm

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875 Aneroid pressure h: 1200

: 211.0...213.0 Del.quantity

1000 : (209.0...215.0)

: 5.00 cm3 Spread

1st version Control lever

position degrees: 57...65

Testina:

1st rack travel in: 11.60 rpm : 915...925 Speed 2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1200

rom : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 7...15

Testina:

: 275 Speed rpm Minimum rack trave: 6.00 rpm

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 12.60...12.70

2nd speed rpm

nd speed rpm : 510 Rack travel in m: 13.60...13.80

3rd speed rpm : 400

Rack travel in m: 0.00...13.00

Aneroid/Altitude

Compensator Test

1st version Settina

: 510 Speed rom

hPa : 1200 Pressure

: 13.60...13.70 Rack travel mm

Measurement

 $1/\min : 510$ Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50

2nd pressure hPa : 370

Rack travel in m: 9.50...9.60

3rd pressure hPa : 740

Rack travel in m: 12.30...12.70

START CUT-OUT

1/min: 275 (285) Speed

MO3

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 510 Speed rpm

Del.quantity cm3/: 292.5...296.5

1000 s: (289.5...299.5)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.60 rpm : 915...925 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.40...11.00

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.80...5.00

Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P10

Note remarks

Test sheet : MAC 11,1 e4 : 08.06.90 Edition Replaces : 2.1.90 Test oil : ISO-4113

Combination no. : D 402 746 867

Injection pump

Pump designation : PES6P12DA72DRS7164 : 0 412 726 816 EP type number

Governor

: RQV325...900PA848-27 Governor design.

: 0 421 815 218 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EC6-350 4VH Engine

: 261.0 1st version kW : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 12.00...13.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 16.00...16.10

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm: 4.3...4.5

Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed

: 3.00...3.40 travel mm

: 850 3rd speed rpm

: 5.90...6.10 : 1000 travel mm

4th speed rpm

: 7.40...7.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

Aneroid pressure h: 1200

: 255.5...257.5 Del.quantity

1000 : (252.5...260.5)

: 5.00 cm3 Spread

RATED SPEED 1st version Control lever position degrees: 55...63 Testing: 1st rack travel in: 15.00 rpm : 950...960 2nd rack travel in: 4.00 rpm : 1095...1125 Speed 4th rack travel in: 1200 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 10...18 Testing: Speed rpm : 275 Minimum rack trave: 5.90 rpm : 325 Rack travel in mm : 4.30...4.50 CONSTANT REGULATION rpm : 325...520 Speed TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 900 Rack travel in m: 16.00...16.10 rpm : 625 2nd speed Rack travel in m: 16.50...16.70 3rd speed rpm : 550 Rack travel in m: 0.00...16.40 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 625 hPa : 1200 Pressure : 16.50...16.70 Rack travel mm Measurement 1/min: 625 Speed 1st pressure hPa : -Rack travel in m: 9.40...9.80

1st version Aneroid pressure h: 1200 Speed : 625 man Del.quantity cm3/: 280.0...286.0 1000 s: (277.0...289.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 400 Speed Del.quantity cm3/: 141.5...145.5 1000 s: (139.5...147.5) **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 15.00 rpm : 950...960 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed Del.quantity cm3/: 135.0...175.0 1000 s: (125.0...185.0) Rack travel in mm : 9.40...9.80

LOW IDLE

rpm : 325 Speed Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0) cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P10

Delivery-valve spring pre-tension 3.0...3.2 mm.

2nd pressure hPa : 265

3rd pressure hPa : 665

Rack travel in m: 11.30...11.40

Rack travel in m: 14.70...15.10

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : MAC 11,1 e5 : 02.05.90 Edition : 9.3.90 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 868

Injection pump

Pump designation : PES6P120A720RS7164 EP type number : 0 412 726 816

Governor

: RQV325...875PA848-28 Governor design.

: 0 421 815 219 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EM6-275L 4VH Engine

: 205.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 Prestroke mm

: (2.70...2.90)
Rack travel in mm : 12.00...13.00
Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 19.3...19.5

100 s: (19.1...19.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...5.1

Del.quantity cm3/: 3.9...4.5 100 s: (3.7...4.7)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm 2nd speed rpm : 450 : 2.80...3.10

travel mm rpm : 850

3rd speed

: 6.20...6.40 travel mm

rpm : 1000 4th speed

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 1200

: 193.5...195.5 Del.quantity 1000 : (191.5...197.5)

: 5.00 cm3 Spread

1st version Control Lever

position degrees: 57...65

Testing:

1st rack travel in: 12.60 rpm : 915...925 Speed 2nd rack travel in: 4.00 rpm : 1045...1075 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 10...18

Testina:

: 275 Speed rom Minimum rack trave: 6.20 Speed rpm : 325

Rack travel in mm : 4.70...5.10

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 13.60...13.70

2nd speed

nd speed rpm : 510
Rack travel in m: 15.40...15.60
rd speed rpm : 750

3rd speed

Rack travel in m: 13.90...14.20

4th speed rpm : 600

Rack travel in m: 15.10...15.30

5th speed rpm : 420

Rack travel in m: 0.00...15.20

Aneroid/Altitude Compensator Test

1st version Setting

: 510 Speed rpm hPa : 1200 Pressure

: 15.40...15.60 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 10.70...11.10

2nd pressure hPa : 265

Rack travel in m: 12.10...12.20

3rd pressure hPa : 450

Rack travel in m: 14.20...14.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

rpm : 510 Speed

Del.quantity cm3/: 261.0...267.0 1000 s: (259.0...269.0)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: 1200 : 875 Speed rpm

Del.quantity cm3/: 179.0...181.0 * 1000 s: (151.0...173.5)

Speed rpm : 400 Del.quantity cm3/: 152.0...156.0

1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60 Speed rpm : 915...925

INTERMEDIATE RATED SPEED

Rack travel in mm: 4.00

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 185.0...225.0

1000 s: (175.0...235.0)

Rack travel in mm : 10.70...11.10

LOW IDLE

: 325 Speed rpm

Rack travel in mm : 4.70...5.10 Del.quantity cm3/: 39.0...45.0

1000 s: (37.0...47.0)

: 8.00 cm3 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P6

Delivery-valve spring pre-tension 3.0...3.2 mm.

Note remarks

: MAC 15.1 e6 : 02.05.90 Test sheet Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 869

Injection pump

Pump designation : PES6P120A720RS7164 EP type number : 0 412 726 816

Governor

: RQV325...875PA848-29 Governor design.

: 0 421 815 220 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

Engine : EMC6 250L 4VH

: 196.0 1st version kW Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 12.00...13.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 18.4...18.6

100 s: (18.2...18.8)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.7...4.9

Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 325 : 1.20...1.40 travel mm

rpm : 450 2nd speed travel mm : 2.80...3.20

rpm : 850 3rd speed

: 6.20...6.40 travel mm

rpm : 1000 4th speed

: 7.70...7.90 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 875

Aneroid pressure h: 900

: 184.0...186.0 Del.quantity

1000 : (182.0...188.0)

: 5.00 cm3 Spread

1st version Control lever

position degrees: 55...63

Testina:

1st rack travel in: 12.00 rpm : 915...925 Speed 2nd rack travel in: 4.00

rpm : 1035...1065 Speed

4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 10...18

Testina:

Speed : 275 rpm Minimum rack trave: 5.90 : 325 rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

rpm : 875 1st speed

Rack travel in m: 13.00...13.10

rpm : 510 2nd speed

Rack travel in m: 14.90...15.10

rpm : 650 3rd speed

Rack travel in m: 13.90...14.20

4th speed rpm : 450

Rack travel in m: 0.00...14.70

Aneroid/Altitude Compensator Test

1st version Setting

: 510 Speed rom hPa : 900 Pressure

: 14.90...15.10 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 10.40...10.80

2nd pressure hPa : 205

Rack travel in m: 11.70...11.80 3rd pressure hPa : 460

Rack travel in m: 13.90...14.30

FUEL DELIVERY CHARACTERISTICS

1st version

Spread

Aneroid pressure h: 900

: 510 Speed rpm

Del.quantity cm3/: 252.0...258.0 1000 s: (250.0...260.0)

cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 152.0...156.0 1000 s: (150.0...158.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.00

rpm : 915...925 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 160.0...200.0 1000 s: (150.0...210.0) Rack travel in mm: 10.40...10.80

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P4

Delivery-valve spring pre-tension

 $3.0...3.2 \, \text{mm}.$

Note remarks

Test sheet : MAC 12,0 a6
Edition : 02.05.90
Replaces : 28.9.89
Test oil : ISO-4113

Combination no. : 0 402 746 870

Injection pump

Pump designation : PES6P12DA72DRS7157 EP type number : 0 412 726 814

Governor

Governor design.: RQV325...875PA878-14

K

Governer no. : 0 421 815 222

Customer—spec. information Customer : MACK

Engine : EM7-250L 4VH

1st version kW : 187.0 Rated speed : 1750

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85

: (2.70...2.90)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasina

Tolerance $+ - \circ : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 17.4...17.6

100 s: (17.1...17.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9 Del.quantity cm3/ : 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLELVE TRAVEL

1st speed rpm : 325

travel mm : 1.30...1.60

2nd speed rpm : 500

travel mm : 3.40...4.00

3rd speed rpm: 900

travel mm : 6.70...6.90

4th speed rpm: 1075

travel mm : 8.40...8.90

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 875

Aneroid pressure h: 900

Del.quantity : 174.0...176.0

1000 : (171.0...179.0)

Spread cm3 : 5.00

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 54...62

Testina:

1st rack travel in: 9.40 rpm : 915...925 Speed

2nd rack travel in: 4.00

Speed rpm : 1020...1050

4th rack travel in: 1200 rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 12...20

Testina:

: 275 Speed rpm Minimum rack trave: 6.30 : 325 rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 10.40...10.50

2nd speed rpm : 510

Rack travel in m: 11.90...12.10

3rd speed rpm : 450

Rack travel in m: 0.00...11.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 510 Speed rpm hPa : 900 Pressure

Rack travel mm : 11.90...12.10

Measurement

Speed 1/min: 510

1st pressure hPa : -

Rack travel in m: 7.80...8.20

2nd pressure hPa : 235

Rack travel in m: 8.80...8.90

3rd pressure hPa : 485

Rack travel in m: 10.80...11.20

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 510 Del.quantity cm3/ : 244.0...250.0

1000 s: (241.0...253.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 400 Del.quantity cm3/: 151.0...155.0 1000 s: (149.0...157.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 915...925 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 9.80

Speed rpm : 805

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...210.0

1000 s: (160.0...220.0)

Rack travel in mm : 10.10...10.30

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5179-P28

Note remarks

Test sheet : MAC 12,0 c : 02.05.90 Edition Replaces : 28.9.89 Test oil : ISO-4113

Combination no. : 0 402 746 871

Injection pump

Pump designation : PES6P120A720RS7157 EP type number : 0 412 726 814

Governor

: RQV325...900PA929K Governor design.

: 0 421 815 223 Governer no.

Customer-spec. information : MACK TRUCKS Customer

Engine : E7-400

1st version kW : 298.0 Rated speed : 1800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening.

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 15.80...15.90

Del.quantity cm3/: 27.5...27.7

100 s: (27.2...28.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

: 1.20...1.40 travel mm rpm: 4502nd speed

: 2.80...3.20 travel mm

3rd speed rpm : 650

: 5.60...5.80 travel mm rpm : 900 4th speed

: 8.30...8.50 travel mm

5th speed 1100 rom : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

travel mm

rpm : 900 Speed Aneroid pressure h: 1200

: 275.0...277.0 Del.quantity 1000 : (272.0...280.0)

: 5.00 Spread cm3

1st version Control lever

position degrees: 58...66

Testing:

1st rack travel in: 14.80 rpm : 940...950 Speed

2nd rack travel in: 4.00

Speed rpm : 1105...1135 4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 7...15

Testing:

: 275 Speed rom Minimum rack trave: 6.30 rpm : 325 Speed

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : ?

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 15.80...15.90

2nd speed rpm : 625

Rack travel in m: 15.20...15.40

3rd speed rpm : 700 Rack travel in m: 15.40...15.60 4th speed rpm : 500

Rack travel in m: 0.00...13.50

Aneroid/Altitude

Compensator Test

1st version

Setting

: 900 Speed rpm hPa : 1200 Pressure

Rack travel mm : 15.80...15.90

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.50...8.90 2nd pressure hPa : 325

Rack travel in m: 10.20...10.30

3rd pressure hPa : 790

Rack travel in m: 13.80...14.20

START CUT-OUT

Speed

1/min : 275 (285)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 625 Speed rpm

Del.quantity cm3/: 302.5...308.5

1000 s: (299.5...311.5) cm3 : 8.00

Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.80

Speed rpm : 940...950

INTERMEDIATE RATED SPEED

Rack travel in mm : 14.70

rpm : 850.0 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0)

Rack travel in mm : 10.80...11.40

LOW IDLE

Speed rpm : 325
Rack travel in mm : 5.10...5.30
Del.quantity cm3/ : 40.0...46.0
1000 s: (38.0...48.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P8

Note remarks

Test sheet : MAC 12,0 c1 Edition : 02.05.90 : 28.9.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 872

Injection pump

Pump designation : PES6P120A720RS7157 EP type number : 0 412 726 814

Governor

Governor design: RQV325...900PA929-1K

: 0 421 815 224 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: E7-350 Engine

1st version kW : 261.0 : 1800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

rpm: 900 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 23.1...23.3

100 s: (22.9...23.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

1.20...1.40 travel mm

2nd speed 450 rom

2.80...3.20 travel mm

3rd speed 650 rpm

: 5.60...5.80 travel mm rpm : 900

4th speed

: 8.30...8.50 travel mm

5th speed : 1100 rpm

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 1200 Del.quantity : 231.5...233.5 1000 : (229.5...235.5)

: 5.00 Spread cm3

1st version Control Lever

position degrees: 58...66

Testina:

1st rack travel in: 12.60 rpm : 940...950 Speed 2nd rack travel in: 4.00

Speed rpm: 1080...1110 4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testina:

Speed rom Minimum rack trave: 5.90 : 325 Speed rom

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 13.60...13.70

2nd speed rpm : 625

Rack travel in m: 13.30...13.50 d speed rpm : 500

3rd speed

Rack travel in m: 0.00...12.00

Aneroid/Altitude Compensator Test

1st version Setting

: 900 Speed rom

hPa : 1200 Pressure

: 13.60...13.70 Rack travel mm

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 325 Rack travel in m: 9.40...9.50

3rd pressure hPa : 685

Rack travel in m: 12.10...12.50

START CUT-OUT

Speed 1/min: 275 (285)

M15

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 625 Speed rpm

Del.quantity cm3/: 263.0...269.0

1000 s: (260.0...272.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 153.0...157.0

1000 s: (151.0...159.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.60 rpm : 940...950 Speed

INTERMEDIATE RATED SPEED

Rack travel in mm: 12.70 rpm : 850 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...210.0 1000 s: (160.0...220.0)

Rack travel in mm : 10.30...10.90

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P4

Note remarks

Test sheet : MAC 12,0 c2 : 02.05.90 Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 873

Injection pump

Pump designation : PES6P120A720RS7157 : 0 412 726 814

EP type number

Governor

Governor design. : RQV325...875PA929-2K

: 0 421 815 225 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: EM7-300L Engine

1st version kW : 224.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 21.1...21.3

100 s: (20.9...21.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm: 325.02nd speed Rack travel in mm: 4.8...5.0

Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

1.20...1.40 travel mm

: 450 2nd speed rpm

2.80...3.20 travel mm 3rd speed rpm : 650

: 5.60...5.80 travel mm

: 900 4th speed rpm

travel mm : 8.30...8.50

1100 5th speed rpm : 10.30...10.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

travel mm

Speed rpm : 875 Aneroid pressure h: 1200

: 211.0...213.0 Del.quantity 1000 : (209.5...215.0)

: 5.00 Spread cm3

1st version Control lever

position degrees: 57...65

Testina:

1st rack travel in: 11.60 Speed rpm : 915...925 2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

Speed rpm : 275 Minimum rack trave: 6.00 rpm

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 875 1st speed

Rack travel in m: 12.60...12.70

2nd speed rpm : 510

Rack travel in m: 13.60...13.80

3rd speed rpm : 400

Rack travel in m: 0.00...13.00

Aneroid/Altitude Compensator Test

1st version

Setting

: 510 Speed rpm hPa : 1200 Pressure

: 13.60...13.80 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.10...8.50 2nd pressure hPa : 370 Rack travel in m: 9.50...9.60

3rd pressure hPa : 740

Rack travel in m: 12.30...12.70

START CUT-OUT

1/min: 275 (285) Speed

M17

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 510 Speed

rpm

Del.quantity cm3/: 292.5...296.5 1000 s: (189.5...199.5)

cm3 : 8.00 Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.60 Speed rpm : 915...925

INTERMEDIATE RATED SPEED Rack travel in mm : 11.90 Speed rpm : 805

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0)

Rack travel in mm : 10.40...11.00

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P12

Note remarks

Test sheet : MAC 12,0 a7 : 02.05.90 Edition : 28.9.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 746 874

Injection pump

Pump designation : PES6P120A720RS7157 : 0 412 726 814 EP type number

Governor

Governor design. : RQV325...850PA909-3K

: 0 421 815 230 Governer no.

Customer-spec, information Customer : MACK TRUCKS

Engine : E7-300

1st version kW : 220.0 : 1700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 20.4...20.6

100 s: (20.2...20.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 325 1st speed

1.20...1.40 travel mm rpm : 450 2nd speed

travel mm

: 2.80...3.20 rpm : 650

3rd speed travel mm

: 5.60...5.80 rpm : 900 4th speed

travel mm : 8.30...8.50

rpm : 1100 5th speed

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Aneroid pressure h: 1200 Del.quantity : 204.0...206.0 Del.quantity
1000

: (202.0...208.0)

: 5.00 cm3 Spread

1st version Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.20 Speed rpm : 890...900 2nd rack travel in: 4.00

Speed rpm: 1030...1060 4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 5...13

Testing:

Speed : 275 rpm Minimum rack trave: 6.10 Speed rpm : 325

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

Speed : 325...520 rom

TORQUE CONTROL

Dimension a mm Torque control curve - 1st version

rpm : 850 1st speed

Rack travel in m: 12.20...12.30

2nd speed rpm : 600

Rack travel in m: 12.40...12.60

: 500 3rd speed rpm

Rack travel in m: 0.00...11.10

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rom hPa : 1200 Pressure

: 12.40...12.60 Rack travel mm

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 7.70...8.10

2nd pressure hPa : 265

Rack travel in m: 9.00...9.10

3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

START CUT-OUT

1/min: 275 (285) Speed

M19

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 600 Speed rpm

Del.quantity cm3/: 241.0...247.0

1000 s: (239.0...249.0)

Spread

cm3 : 8.00 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 148.0...152.0

1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20

Speed

rpm : 890...900

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 180.0...220.0 1000 s: (170.0...230.0)

Rack travel in mm : 10.00...10.60

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

: MACK # 313GC5185-P14

Note remarks

: MAC 12,0 a8 Test sheet : 02.05.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 875

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

: RQV325...975PA909-4K Governor design.

: 0 421 815 231 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

Engine : E7-300A

1st version kW : 224.0 Rated speed : 1950

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Openina |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 20.1...20.3

100 s: (19.9...20.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.02nd speed

Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

: 0.50...1.00 travel mm

325 2nd speed rpm

: 1.50...1.70 travel mm

rpm : 450 3rd speed

: 2.90...3.30 travel mm

rpm : 1000 4th speed

: 8.40...8.60 travel mm

: 1200 5th speed rpm

: 10.20...10.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

: 201.0...203.0 Del.quantity

1000 : (199.0...205.0)

: 5.00 Spread cm3

1st version Control Lever

position degrees: 54...62

Testing:

1st rack travel in: 11.30

Speed rpm : 1015...1025

2nd rack travel in: 4.00

Speed rpm : 1145...1175 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 8...16

Testina:

: 275 Speed rpm Minimum rack trave: 6.10 : 325 rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 975 1st speed

Rack travel in m: 12.30...12.40

: 600 2nd speed rpm

Rack travel in m: 11.70...11.90

3rd speed rpm : 500

Rack travel in m: 0.00...11.50

Aneroid/Altitude Compensator Test

1st version

Setting

: 975 Speed rom hPa : 1200 Pressure

: 12.30...12.40 Rack travel mm

Measurement

1/min: 975 Speed

1st pressure hPa : -

Rack travel in m: 7.70...8.10

2nd pressure hPa : 235

Rack travel in m: 9.00...9.10

3rd pressure hPa : 460

Rack travel in m: 10.80...11.20

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 600 rpm

Del.quantity cm3/: 221.0...227.0

1000 s: (219.0...229.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.00...10.60

LOW IDLE

: 325 Speed rpm

Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P18

M21

Note remarks

: MAC 12,0 c3 : 02.05.90 Test sheet Edition : 28.9.89 Replaces : ISO-4113 Test oil

Combination no. : 0 402 746 876

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

Governor design. : RQV325...850PA929-3K

: 0 421 815 232 Governer no.

Customer-spec. information : MACK TRUCKS Customer

Engine : E7-300 4VH

1st version kW : 220.0 : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

: 0.6 diameter mm

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)
Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm:850

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 20.4...20.6

100 s: (20.2...20.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

325 1.20...1.40 1st speed rpm : travel mm

: 450 2nd speed

rpm : 2.80...3.20 travel mm

3rd speed rpm : 650

5.60...5.80 travel mm

900 4th speed rpm

8.30...8.50 travel mm

: 1100 5th speed rpm

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850

Aneroid pressure h: 1200

: 204.0...206.0 Del.quantity 1000 : (202.0...208.0)

: 5.00 cm3 Spread

1st version

Control lever

position degrees: 51...59

Testing:

1st rack travel in: 11.20 Speed rpm : 890...900

2nd rack travel in: 4.00

Speed rpm: 1040...1070 4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed rom : 275 Minimum rack trave: 6.30 rpm : 325 Speed

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

: 325...520 Speed rom

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 12.20...12.30

2nd speed rpm : 600

Rack travel in m: 12.50...12.70

rpm : 500 3rd speed

Rack travel in m: 0.00...11.10

Aneroid/Altitude

Compensator Test

1st version Setting

: 600 Speed rom

hPa : 1200 Pressure

Rack travel mm. : 12.50...12.70

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 7.70...8.10

2nd pressure hPa : 265 Rack travel in m: 9.00...9.10

3rd pressure hPa : 565

Rack travel in m: 11.20...11.60

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 600 rpm

Del.quantity cm3/: 241.0...247.0

1000 s: (239.0...249.0)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 148.0...152.0

1000 s: (146.0...154.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.20 rpm : 890...900 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm

Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0) cm3 : 8.00

1000 s: (12.00)

Remarks:

Spread

: MACK # 313GC5185-P22

M23

Note remarks

: MAC 12,0 c4 Test sheet : 01.02.90 Edition

Replaces

Test oil : ISO-4113

: 0 402 746 877 Combination no.

Injection pump

Pump designation : PES6P12OA72ORS7157

EP type number : 0 412 726 814

Governor

Governor design. : RQV325...975PA929-4K

: 0 421 815 233 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: E7-300A Engine

: 224.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 20.1...20.3

100 s: (19.9...20.5)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 0.50...1.00 travel mm

2nd speed rpm : 325 : 1.50...1.70 travel mm

3rd speed rpm : 450

: 2.90...3.30 travel mm

rpm : 1000 4th speed

: 8,40...8.60 travel mm

: 1200 5th speed rpm

: 10.20...10.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 975

Aneroid pressure h: 1200

: 201.0...203.0 Del.quantity 1000 : (199.0...205.0)

: 5.00 cm3 Spread

1st version Control lever

position degrees: 54...62

Testina:

1st rack travel in: 11.30

rpm : 1015...1025 Speed

2nd rack travel in: 4.00

rpm : 1165...1195 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm Minimum rack trave: 6.10

Speed rpm

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 975

Rack travel in m: 12.30...12.40

: 600 2nd speed rpm

Rack travel in m: 11.70...11.90

rpm : 500 3rd speed

Rack travel in m: 0.00...11.50

Aneroid/Altitude

Compensator Test

1st version Setting

: 975 Speed man

hPa : 1200 Pressure

Rack travel mm : 12.30...12.40

Measurement

1/min: 975 Speed

1st pressure hPa : -

Rack travel in m: 7.70...8.10

2nd pressure hPa : 235

Rack travel in m: 9.00...9.10

3rd pressure hPa : 570

Rack travel in m: 11.60...12.00

START CUT-OUT

1/min: 275 (285) Speed

M25

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 600 Speed rpm

Del.quantity cm3/: 221.0...227.0

1000 s: (219.0...229.0) cm3 : 8.00

Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.guantity cm3/: 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.00...10.60

LOW IDLE

rpm Speed

Rack travel in mm : 4.70...4.90 Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P20

Note remarks

Test sheet : RVI 12,0 i
Edition : 16.02.90
Replaces : 15.12.89
Test oil : ISO-4113

Combination no. : 0 402 746 878

Injection pump

Pump designation : PES6P120A320RS7191 EP type number : 0 412 726 828

Governor

Governor design. : RQV275...1000PA927

Governer no. : 0 421 813 808

Customer-spec. information Customer : RVI

Engine : MIDR 06-35-40

1st version kW : 314.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.80...4.90 : (4.75...4.95)

Rack travel in mm : 12.50...13.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 27.7...27.9

100 s: (27.4...28.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 275.0
Rack travel in mm : 4.5...4.7
Del.quantity cm3/: 2.3...2.9

100 s: (2.0...3.2) Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 275

travel mm : 1.10...1.50

2nd speed rpm : 500 travel [18] : 3.60...4.20

3rd speed rpm : 700

travel mm : 5.50...5.90 th speed rpm : 1000

4th speed rpm : 1000 travel mm : 7.60...7.80

5th speed rpm: 1400

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION Control-lever position

ntrol—lever position Dearee: —1

peed rpm: 1060

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 600 Aneroid pressure h: 900

Del.quantity : 277.0...279.0

1000 : (274.0...282.0)

cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 298...306 Testina: 1st rack travel in: 12.90 Speed rpm : 1065...1075 2nd rack travel in: 4.00 rpm : 1195...1225 Speed 4th rack travel in: 1300 Speed rom : 0.00...1.00LOW IDLE 1 Control lever position degrees: 242...250 Testina: : 200 Speed rpm Minimum rack trave: 5.80 rpm : 275 Speed Rack travel in mm : 4.50...4.70 CONSTANT REGULATION : 330...430 Speed rpm Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 900 Pressure Measurement $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 8.90...9.30 2nd pressure hPa : 600 Rack travel in m: 12.90...13.00 3rd pressure hPa : 240 Rack travel in m: 9.70...10.10 START CUT-OUT 1/min: 225 (245) Speed

FUEL DELIVERY CHARACTERISTICS

rpm : 1000

Aneroid pressure h: 900

Del.quantity cm3/: 268.0...274.0 1000 s: (265.0...277.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 128.0...136.0 1000 s: (125.0...139.0) cm3 : 10.00Spread 1000 s: (-) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 142.0...144.0 1000 s: (139.0...147.0) **BREAKAWAY** 1st were ion 1mm r*tk travel less than fuck load rack tr: 12.90 rpm : 1065...1075 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 145.0...175.0 1000 s: (141.0...179.0) LOW IDLE : 275 Speed rpm Rack travel in mm : 4.50...4.70 Del.quantity cm3/: 23.0...29.0 1000 s: (20.0...32.0) Spread cm3 : 8.001000 s: (12.00) Remarks: 2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

Speed

1st version

Note remarks

Test sheet : SAC 10,5 a : 16.02.90 Edition Replaces : 2.1.90 : ISO-4113 Test oil

Combination no. : 0 402 746 879

Injection pump

Pump designation : PES6P130A320LS7173-1

: 0 412 736 803 EP type number

Governor

Governor design. : RQV400...750PA928

: 0 421 813 809 Governer no.

Customer-spec. information Customer : SACM

Engine : UD25-L6

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 443 022

Openina .

pressure, bar : 172...175

: 1 680 750 060 Test lines

Outside diameter x Wall thickness

: 8.00x2.00x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm : (2.75...2.95)

Rack travel in mm : 9.00...12.00

: 1-4-2-6-3- 5 Firing order

Phasing : 0-60-120-180-240-300

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 48.0...48.3

100 s: (47.6...48.6)

Spread cm3 : 0.6

100 s: (1.0)

rpm : 400.02nd speed Rack travel in mm: 4.7...5.3 Del.quantity cm3/: 5.0...5.6

100 s: (4.6...6.0)

cm3 : 1.0 Spread 100 s: (1.4)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 400

travel mm : 0.50...0.90

2nd speed rpm : 500

1.90...2.10 travel mm

3rd speed rpm : 650

: 1.90...2.10 travel mm

: 750 4th speed rpm

: 5.00...5.80 travel min

900 5th speed rpm

: 11.00...12.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 480.0...483.0 Del.quantity 1000 : (476.5...486.5)

: 6.00

Spread cm3

: (10.00) 1000

RATED SPEED

1st version

Testing:

1st rack travel in: 11.90 rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 777...790 Speed

4th rack travel in: 900

Speed rpm : 0.00...1.00

LOW IDLE 1

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 : 400 Speed rpm

Rack travel in mm : 4.90...5.10 Rack travel in mm : 2.00

Speed : 670...730 rpm

INTERMEDIATE RATED SPEED Rack travel in mm : 4.00

STARTING FUEL DELIVERY

: 100 Speed rpm

Remarks:

APPLICATION

Navy

Note remarks

Test sheet : BAO 15,9 b3 Edition : 06.07.90 Replaces : 2.10.89 Test oil : ISO-4113

Combination no. : 0 402 746 880

Injection pump

Pump designation : PES6P12DA32DRS7105 EP type number : 0 412 726 800

Governor

Governor design. : RQV350...900PA935-1

: 0 421 813 820 Governer no.

Customer-spec. information Customer : BAUDOUIN

: 6P15-2 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 074 Test lines

Outside diameter x Wall thickness

x Lenath mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 Prestroke mm : (3.55...3.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 33.9...34.1

100 s: (33.6...34.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 350.02nd speed

Rack travel in mm : 4.5...4.9 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.70...1.00 travel mm

2nd speed rpm : 500 : 3.10...3.80 travel mm

rpm : 800 3rd speed

travel mm

: 6.50...6.90

rpm : 900 4th speed : 7.80...8.10 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 940

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

: 339.0...341.0 Del.quantity 1000 : (336.0...344.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 117...125

Testing:

1st rack travel in: 11.00 Speed rpm : 940...950 2nd rack travel in: 4.00

Speed rpm : 1000...1030 4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 21...29

Testing:

Speed : 100 rpm Minimum rack trave: 6.20 Speed rpm: 350

Rack travel in mm : 4.60...4.80

CONSTANT REGULATION

rpm : 350...450 Speed

START CUT-OUT

1/min: 270 (290) Speed

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.00 rpm : 940...950 Speed

Remarks:

APPLICATION

Navy

Note remarks

: PER 12,2 f : 06.07.90 Test sheet Edition Replaces : 2.2.90 Test oil : ISO-4113

Combination no. : 0 402 746 882

Injection pump

Pump designation : PES6P120A320RS7156-1

: 0 412 726 830 EP type number

Governor

Governor design. : RQV300..1050PA941

: 0 421 813 834 Governer no.

Customer-spec. information Customer : PERKINS

: 2006 TW-H Engine

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Openina .

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm : (4.45...4.65) Rack travel in mm : 9.00...12.00

: 1-4-2-6-3-5 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 26.9...27.1

100 s: (26.6...27.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 8.3...8.5 Del.quantity cm3/: 6.3...6.9 100 s: (6.1...7.1)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 1st speed rpm : 350

: 0.80...1.20 travel mm

2nd speed rpm : 420

travel mm : 3.60...4.20 rpm : 700 3rd speed

: 4.70...5.30 travel mm

: 1120 4th speed rpm travel mm

: 5.50...5.70 rpm : 1250 5th speed

: 8.70...9.10 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 800 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1200

Del.quantity : 207.0...2, ...
1000 : (266.0...274.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version Control Lever

position degrees: 98...106

Testina:

1st rack travel in: 13.00

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1180...1210 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 70...78

Testing:

: 200 Speed rpm Minimum rack trave: 10.00 : 350 Speed rpm

Rack travel in mm : 8.30...8.50

CONSTANT REGULATION

rpm : 350...420 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

Speed : 500 rpm hPa : 1200 Pressure

: 14.00...14.10 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.40

2nd pressure hPa : 710

Rack travel in m: 13.10...13.20 3rd pressure hPa : 560 Rack travel in m: 11.80...12.00

START CUT-OUT

1/min : 300 (320) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 600 Speed

N₀5

Del.quantity cm3/: 275.0...281.0 1000 s: (272.0...284.0) Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 182.0...184.0 1000 s: (179.0...187.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 185.0...225.0 1000 s: (181.0...229.0)

Remarks:

Delivery-valve spring pre-tension

3.2...3.4 mm.

Permissible alteration of 3.0...3.5 mm

Because of flattening, set the spring preload on new delivery-valve holders

to 2.9...3.1 mm.

Note remarks

: MB 11,8 s Test sheet : 06.07.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 884

Injection pump

Pump designation : PES6P120A720LS7196

EP type number : 0 412 726 831

Governor

Governor design. : RQV450..1050PA886-1

: 0 421 813 835 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 h LA Engine

1st version kW : 304.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 : (4.95...5.15) Prestroke mm

Rack travel in mm : 19.00...21.00 Firing order : 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 6

BASIC SETTING

rpm : 600 1st speed

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 28.4...28.6

100 s: (28.1...28.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 450.0 2nd speed Rack travel in mm: 4.4...5.0

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) cm3 : 0.8

Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 400 1st speed

: 1.40...1.70 travel mm rpm : 700 2nd speed

: 4.00...4.40 travel mm

rpm : 1100 3rd speed

: 7.60...8.10 travel mm

: 1200 4th speed rpm

: 9.50...10.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1150 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600Speed

Aneroid pressure h: 950 : 284.0...286.0 Del.quantity 1000 : (281.0...289.0) : 5.00 cm3 Spread 1000 : (9.90) RATED SPEED 1st version Control lever position degrees: 115...123 Testina: 1st rack travel in: 14.40 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1180...1210 Speed 4th rack travel in: 1300 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 60...68 Speed : 450 rom Rack travel in mm : 4.40...5.00 CONSTANT REGULATION : 450...650 Speed rom TORQUE CONTROL Dimension a mm : 0.60 : 1050 2nd speed rpm Rack travel in m: 15.40...15.60 : 900 3rd speed rpm Rack travel in m: 15.70...15.90 : 800 4th speed rpm Rack travel in m: 16.00...16.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 950 Pressure : 15.20...15.40 Rack travel mm Measurement Speed $1/\min : 600$ 1st pressure hPa : 300 Rack travel in m: 11.80...12.00 2nd pressure hPa : 600 Rack travel in m: 13.70...13.90 3rd pressure hPa : 1200 Rack travel in m: 15.50...15.70 4th pressure hPa : -

START CUT-OUT 1/min: 370 (390) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 : 1050 Speed rpm Del.quantity cm3/: 280.0...283.0 1000 s: (277.0...286.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/: 298.0...302.0 1000 s: (295.0...305.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 145.0...147.0 1000 s: (142.0...150.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.40 rpm : 1090...1100 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/ : 280.0...300.0 1000 s: (276.0...304.0) Remarks:

Rack travel in m: 10.10...10.50

Note remarks

: MAC 12,0 e5 Test sheet : 17.05.90 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 402 746 885

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

Governor design. : RQV325...875PA944-3K

: 0 421 815 238 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: EM7-275 Engine

: 205.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 19.2...19.4

100 s: (19.0...19.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed

Rack travel in mm: 4.7...4.9

Del.quantity cm3/: 4.0...4.6 100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed

travel mm : 2.80...3.20

rpm : 650 3rd speed

: 5.60...5.80 travel mm

4th speed rpm : 900

8.30...8.50 travel mm

1100 5th speed rpm

: 10.30...10.80 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200

: 192.0...194.0 Del.quantity

1000 : (190.0...196.0)

: 5.00 Spread cm3

1st version

Control lever

position degrees: 54...62

Testing:

1st rack travel in: 10.40 rpm : 915...925 Speed

2nd rack travel in: 4.00

Speed rpm : 1025...1055 4th rack travel in: 1150

rpm : 0.00...1.00Speed

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed : 275 rpm Minimum rack trave: 5.90 : 325 rom

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 875 1st speed

Rack travel in m: 11.40...11.50

rpm : 510 2nd speed

Rack travel in m: 12.80...13.00

3rd speed rpm : 600

Rack travel in m: 12.40...12.80

4th speed rpm : 450

Rack travel in m: 0.00...12.50

Aneroid/Altitude

Compensator Test

1st version

Setting

: 510 Speed man hPa : 1200 Pressure

Rack travel mm : 12.80...13.00

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.00...8.40

2nd pressure hPa : 355 Rack travel in m: 9.40...9.50

3rd pressure hPa : 630

Rack travel in m: 11.50...11.90

START CUT-OUT

1/min: 275 (285) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 510 Speed rpm

Del.quantity cm3/: 268.0...274.0

1000 s: (266.0...276.0)

cm3 : 8.00Spread 1000 s: (12.0)

Aneroid pressure h: -

rpm : 400 Speed

Del.quantity cm3/: 157.5...161.5 1000 s: (155.5...163.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.40

rpm : 915...925 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 190.0...230.0

1000 s: (180.0...240.0)

Rack travel in mm : 10.40...11.00

LOW IDLE

rpm : 325 Speed

Rack travel in mm : 4.70...4.90

Del.quanticy cm3/: 40.0...46.0 1000 s: (38.0...48.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P22

Note remarks

: MAC 12,0 e1 Test sheet : 02.05.90 Edition

Replaces

: TSO-4113 Test oil

Combination no. : 0 402 746 886

Injection pump

Pump designation : PES6P120A720RS7157

: 0 412 726 814 EP type number

Governor

: RQV325...975PA944-4K Governor design.

: 0 421 815 239 Governer no.

Customer-spec. information

Customer : MACK TRUCKS

: E7-250A Engine

: 186.0 1st version kW : 1950 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm : 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 10.40...10.50

Del.quantity cm3/: 16.4...16.6

100 s: (16.2...16.8)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.7...4.9 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 275 1st speed

: 0.50...1.00 travel mm

: 325 2nd speed rpm 1.50...1.70 travel mm

: 450 3rd speed rpm

travel mm : 2.90...3.30 : 1000

4th speed rpm travel mm : 8.40...8.60

5th speed : 1200 rpm

: 10.20...10.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Aneroid pressure h: 1200

: 164.5...166.5 Del.quantity 1000 : (162.5...168.5)

: 5.00 Spread cm3

1st version

Control Lever

position degrees: 54...62

Testina:

1st rack travel in: 9.40

rpm : 1015...1025 Speed

2nd rack travel in: 4.00

Speed rpm: 1120...1150 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 8...16

Testing:

Speed rom

Minimum rack trave: 6.10 rpm : 325 Speed

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

: 325...520 Speed rom

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 975

Rack travel in m: 10.40...10.50

2nd speed rpm : 600

Rack travel in m: 10.80...11.00 3rd speed rpm : 500

Rack travel in m: 0.00...10.20

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 600 rom hPa : 1200 Pressure

Rack travel mm : 10.80...11.00

Measurement

 $1/\min : 600$ Speed

1st pressure hPa : -

Rack travel in m: 7.50...7.90

2nd pressure hPa : 195 Rack travel in m: 8.40...8.50

3rd pressure hPa : 375

Rack travel in m: 9.90...10.30

START CUT-OUT

1/min: 275 (285) Speed

N11

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 600 Speed rpm

Del.guantity cm3/: 198.5...204.5

1000 s: (196.5...206.5)

cm3 : 8.00Spread

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 146.0...150.0

1000 s: (144.0...152.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.40

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 180.0...220.0

1000 s: (170.0...230.0)

Rack travel in mm : 10.00...10.60

LOW IDLE

Speed rpm : 325 Rack travel in mm : 4.70...4.90

Del.quantity cm3/: 40.0...46.0

1000 s: (38.0...48.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5185-P26

Note remarks

: MAC 11.1 e9 : 02.05.90 Test sheet Edition

Replaces

: ISO-4113 Test oil

: 0 402 746 888 Combination no.

Injection pump

Pump designation : PES6P120A720RS7164

: 0 412 726 816 EP type number

Governor

: RQV325...875PA878-15 Governor design.

: 0 421 815 235 Governer no.

Customer—spec. information

: MACK TRUCKS Customer

: EMC6 300L 4VH Engine

: 200.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

: 1 680 750 008 Test Lines

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values ____

BEGINNING OF DELIVERY

Test pressure, bar: 17...19

Prestroke mm

: 2.75...2.85 : (2.70...2.90)

Rack travel in mm : 12.00...13.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 875 1st speed

Rack travel in mm : 14.90...15.00

Del.quantity cm3/: 22.5...22.7

100 s: (22.3...22.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 325.0

Rack travel in mm : 4.7...4.9 Del.quantity cm3/: 3.9...4.5

100 s: (3.7...4.7)

cm3 : 0.8 Spread

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.20...1.40 travel mm

rpm : 450 2nd speed

: 3.00...3.40 travel mm

: 850 3rd speed rpm

: 5.90...6.10 rpm : 1000 travel mm

4th speed

: 7.40...7.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed Aneroid pressure h: 1200

: 225.0...227.0 Del.quantity

1000 : (223.0,...229.0)

: 5.00 Spread cm3

1st version Control Lever

position degrees: 54...62

Testina:

1st rack travel in: 13.90 Speed rpm : 915...925 2nd rack travel in: 4.00

rpm : 1065...1095 Speed

4th rack travel in: 1160

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 10...18

Testing:

: 275 Speed rom Minimum rack trave: 5.90 rpm : 325 Speed

Rack travel in mm : 4.70...4.90

CONSTANT REGULATION

fpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

rpm : 875 1st speed

Rack travel in m: 14.90...15.00

rpm : 510 2nd speed

Rack travel in m: 16.80...17.00

3rd speed rpm : 700

Rack travel in m: 15.60...15.80

4th speed rpm : 600

Rack travel in m: 16.40...16.60

5th speed rom : 420

Rack travel in m: 0.00...16.80

Aneroid/Altitude Compensator Test

1st version Setting

: 510 Speed rpm hPa : 1200 Pressure

Rack travel mm : 16.80...17.00

Measurement

 $1/\min : 510$ Speed

1st pressure hPa : -

Rack travel in m: 10.90...11.30

2nd pressure hPa : 375

Rack travel in m: 12.70...12.80

3rd pressure hPa : 735

Rack travel in m: 15.70...16.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 510 Del.quantity cm3/: 305.0...311.0 1000 s: (302.0...314.0)

: 8.00 cm3

1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 156.0...160.0 1000 s: (154.0...162.0)

BREAKAWAY

Spread

1st version

1mm rack travel less than

full load rack tr: 13.90

rpm : 915...925 Speed

INTERMEDIATE RATED SPEED Rack travel in mm: 11.20

rpm : 805 Speed Rack travel in mm: 4.80

: 300 Speed rom

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...200.0

1000 s: (150.0...210.0)

Rack travel in mm : 10.90...11.30

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.70...4.90
Del.quantity cm3/: 39.0...45.0 1000 s: (37.0...47.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5181P16

Delivery-valve spring pre-tension

3.0...3.2 mm.

Note remarks

: MAC 12,0 h Test sheet Edition : 09.07.90

Replaces

Test oil : ISO-4113

Combination no. : 0 402 746 890

Injection pump

Pump designation : PES6P120A720RS7200

: D 412 726 833 EP type number

Governor

Governor design. : RQV325...875PA944-5K

: 0 421 815 240 Governer no.

Customer-spec. information

: MACK TRUCKS Customer

: EM7-275 Engine

: 202.0 1st version kW : 1750 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.25...3.35 : (3.20...3.40)

Rack travel in mm : 11.00...13.00 Firing order : 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 875

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 23.5...23.7

100 s: (23.3...23.9)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.40...1.60 travel mm

rpm : 450 2nd speed travel mm

: 3.30.,.3.70

rpm : 700 3rd speed : 8.00...8.20 travel mm

rpm : 900 4th speed

: 9.40...9.60 travel mm

: 1050 5th speed rpm

: 10.60...11.00 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 875 Speed

Aneroid pressure h: 1200

: 235.5...237.5 Del.quantity 1000 : (233.5...239.5)

: 5.00 Spread cm3

1st version

Control lever

position degrees: 60...68

Testing:

1st rack travel in: 12.20 rpm : 915...925 Speed

2nd rack travel in: 4.00

Speed rpm : 1055...1085

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 8...16

Testing:

: 275 Speed rpm Minimum rack trave: 6.00 : 325 rpm

Rack travel in mm : 4.90...5.00

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 875

Rack travel in m: 13.20...13.30 od speed rpm : 510

2nd speed

Rack travel in m: 13.80...14.00

3rd speed rpm : 550

Rack travel in m: 13.80...14.00

4th speed rpm : 450

Rack travel in m: 13.10...13.50

Aneroid/Altitude

Compensator Test

1st version Setting

Speed : 510 rom hPa : 1200 Pressure

: 13.80...14.00 Rack travel mm

Measurement

1/min: 510 Speed

1st pressure hPa : -

Rack travel in m: 8.60...9.00

2nd pressure hPa : 310 Rack travel in m: 10.10...10.20

3rd pressure hPa : 635

Rack travel in m: 12.50...12.90

START CUT-OUT

1/min : 250 (255) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 510 rom

Del.quantity cm3/: 310.0...314.0

1000 s: (307.0...317.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: rpm : 400 Speed

Del.quantity cm3/: 155.5...159.5

1000 s: (153.5...161.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 915...925 Speed

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 190.0...230.0 1000 s: (180.0...240.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 325
Rack travel in mm : 4.90...5.10

Del.quantity cm3/: 40.0...46.0 1000 s: (38.0...48.0)

cm3 : 8.00Spread

1000 s: (12.00)

Remarks:

: MACK # 313GC5188-P4

Note remarks

: CUM 8,3 D 5 : 17.05.90 Test sheet Edition : 19.03.90 Replaces Test oil : ISO-4113

: 0 403 436 106 Combination no.

Injection pump

Pump designation : PES6MW100/120RS1143

: 0 413 406 137 EP type number

Governor

Governor design. : RQV350...1100MW78-2

: 0 420 083 160 Governer no.

: 3915907 Cust. part no.

Customer-spec. information Customer : CUMMINS/US

: 6 CTA-8.3 Engine

: 179.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.05...3.15 Prestroke mm

: (3.00...3.20)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.3...7.5 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLELVE TRAVEL

rpm : 1210 1st speed

: 9.00...9.40 travel mm

1100 2nd speed rpm : travel mm

: 7.90...8.10 rpm : 550 3rd speed

: 3.00...3.60 travel mm

rpm : 350 4th speed : 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed Aneroid pressure h: 900

: 150.0...152.0 Del.quantity

: (148.0...154.0) : 3.50 1000

Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 44...52

Testing:

1st rack travel in: 11.70

rpm : 1140...1150

2nd rack travel in: 4.00

rpm : 1230...1260 Speed

4th rack travel in: 1330

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 13...21

Setting point w/out bumper spring

: 350 rpm Rack travel in mm: 7.4

Testing:

rpm : 100 Speed Minimum rack trave: 9.00 : 350 Speed rpm

Rack travel in mm : 7.30...7.50

CONSTANT REGULATION

rpm : 360...550Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : -Pressure

: 9.60...9.70 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 300

Rack travel in m: 10.80...10.90

2nd pressure hPa : 520
Rack travel in m: 11.90...12.20
3rd pressure hPa : 900

Rack travel in m: 12.70...12.80

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 76.0...78.0

1000 s: (74.0...80.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

: 100 Speed man

Del.quantity cm3/: 205.0...225.0 1000 s: (202.0...228.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.30...7.50

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

: C.D.C. # 3915907

Start-of-delivery mark/lock = 8.0° angular displacement of the cam after

start of delivery of cylinder 1.

Note remarks

Test sheet : CUM 8,3 D 4
Edition : 06.07.90
Replaces : 23.04.90
Test oil : ISO-4113

Combination no. : 0 403 436 107

Injection pump

Pump designation : PES6MW100/120RS1143

EP type number : 0 413 406 137

Governor

Governor design. : RQV350...1100MW82-2

Governer no. : 0 420 083 161

Cust. part no. : 3915168

Customer-spec. information
Customer : CUMMINS/US

Engine : 6 CTA

1st version kW : 186.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 017

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.05...3.15

: (3.00...3.20)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Phasing

Tolerance $+ - ^{\circ} : 0.50 (0.75)$

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 15.0...15.2

100 s: (14.8...15.4)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.2)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLELVE TRAVEL

1st speed rpm : 1250 travel mm : 9.00...9.40

2nd speed rpm : 1140

travel mm : 7.80...8.00

3rd speed rpm : 700

travel mm : 3.80...4.40 4th speed rpm : 350

travel mm : 1.20...1.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 900

Del.quantity : 150.0...152.0

1000 : (148.0...154.0)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 42...50 Testina: 1st rack travel in: 11.70 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 Speed rpm : 1240...1270 4th rack travel in: 1400 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 12...20 Setting point w/out bumper spring : 350 rpm Rack travel in mm: 7.3 Testing: Speed rpm : 100 Minimum rack trave: 8.80 Speed rpm : 350 Rack travel in mm : 7.20...7.40 Rack travel in mm : 2.00 CONSTANT REGULATION rpm : 360...500 Speed TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1100 Rack travel in m: 12.70...12.80 rpm : 700 2nd speed Rack travel in m: 13.60...13.70 rpm : 900 3rd speed Rack travel in m: 12.90...13.20 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed man hPa : Pressure : 9.50...9.70 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.80...10.90 2nd pressure hPa : 570

Rack travel in m: 12.30...12.60

Rack travel in m: 13.60...13.70

3rd pressure hPa : 900

1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 : 700 Speed rpm Del.quantity cm3/: 159.0...161.0 1000 s: (157.0...163.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.70 rpm : 1150...1160 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 205.0...225.0 1000 s: (202.0...228.0) Rack travel in mm : 19.00...21.00 LOW IDLE Speed rpm Rack travel in mm : 7.20...7.40 Del.quanticy cm3/: 16.0...20.0 1000 s: (14.0...22.0) Spread cm3: 3.50 1000 s: (5.50) Remarks: : C.D.C. # 3915168 Start-of-delivery mark/lock = 8.0°

angular displacement of the cam after start of delivery of cylinder 1.

Note remarks

: MB 4,0 A 31 Test sheet Edition : 06.07.90

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 118

Injection pump

Pump designation : PES4MW100/720RS1127

EP type number : 0 413 404 103

Governor

Governor design. : RQV300...1200MW48-13

: 0 420 083 220 Governer no.

Customer-spec. information Customer : MB-NF7

: 0M364A Engine

1st version kW : 77.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 8.2...8.4 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3 100 s: (0.5)

Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1325 1st speed

9.40...9.80 travel mm

: 1250 2nd speed rpm

: 8.60...8.80 travel mm

: 550 3rd speed rpm

: 3.00...3.60 travel mm

: 300 4th speed rpm

: 1.20...1.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1250

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

: 1200 Speed rpm

: 75.0...77.0 Del.quantity 1000 : (73.0...79.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

N20

Control Lever position degrees: 107...115 Testina: 1st rack travel in: 10.00 rpm : 1240...1250 Speed 2nd rack travel in: 4.00 rpm : 1310...1340 Speed 4th rack travel in: 1400 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 75...83 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 8.3 Testing: rpm : 100 Speed Minimum rack trave: 9.70 rpm : 300 Speed Rack travel in mm : 8.20...8.40 TORQUE CONTROL Dimension a mm : 1.00 Torque control curve - 1st version 1st speed rpm : 1200 Rack travel in m: 11.00...11.10 rpm : 600 2nd speed Rack travel in m: 12.00...12.20 3rd speed rpm : 800 Rack travel in m: 11.60...11.80 4th speed rpm : 900 Rack travel in m: 11.20...11.40 START CUT-OUT 1/min : 200 (230) Speed FUEL DELIVERY CHARACTERISTICS 1st version : 600 Speed rpm Del.quantity cm3/: 65.0...68.0 1000 s: (62.5...70.5) cm3 : 5.00 Spread 1000 s: (7.0) rpm : 800 Speed Del.quantity cm3/: 70.0...73.0 1000 s: (67.5...75.5) **BREAKAWAY** 1st version 1mm rack travel less than

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Remarks:

N21

full load rack tr: 10.00

Note remarks

: MB 6,0 D 40 : 17.05.90 Test sheet Edition : 12.08.88 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 207

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RQ300/1300MW96 : 0 420 082 032 Governer no.

Customer-spec. information : MB-NFZ Customer

: 0M366A Engine

: 125.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 7.8...8.0 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1425 1st speed

travel mm : 9.50...9.90

: 1350 2nd speed rpm

: 7.80...8.00 travel mm : 525 3rd speed rpm

: 4.90...5.50 travel mm

: 300 4th speed rom

: 2.10...2.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 1200

Rack travel in mm : 12.70...14.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 77.0...79.0 Del.quantity 1000 : (75.0...81.0)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 96...104 Setting point: Speed rom Rack travel in mm: 13.5 Testing: 1st rack travel in: 10.00 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring rpm Rack travel in mm: 7.9 Testina: : 100 Speed rpm Minimum rack trave: 9.00 : 300 Speed rpm Rack travel in mm : 7.80...8.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 11.00...11.10 rpm : 800 2nd speed Rack travel in m: 11.80...12.00 3rd speed rpm : 585 Rack travel in m: 12.00...12.20 4th speed rpm : 1100 Rack travel in m: 11.00...11.10 START CUT-OUT Speed 1/min: 180 (200) FUEL DELIVERY CHARACTERISTICS 1st version rpm : 800 Speed 1000 s: (74.0...80.0) Spread

Del.quantity cm3/: 76.0...78.0 cm3 : 5.00 1000 s: (7.0) : 585 Speed rpm Del.quantity cm3/: 68.5...71.5 1000 s: (66.0...74.0)

RACK STOP ADJUSTMENT

: 550 Speed rpm

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.00 rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.guantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

rpm : 300 Speed Rack travel in mm : 7.80...8.00 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50)

Remarks:

Note remarks

Test sheet

: IHC 7,6 R25

Edition Replaces

: 17.05.90 : 09.12.88

Test oil

: ISO-4113

Combination no. : 0 403 446 213

Injection pump

Pump designation : PES6MW100/320RS1112

EP type number

: 0 413 406 108

Governor

Governor design. Governer no.

: RQV350...1300MW72-4

: 0 420 083 170

Customer-spec, information Customer

: NAVISTAR

Engine

: DT-466

1st version kW

Rated speed

: 154.5 : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 2 417 413 037

Inlet press., bar: 2.80

Test nozzle holder

assembly

: 1 688 901 016

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm

: 0.5

Test lines

: 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order

: 1-5-3-6-2-4

: 0-60-120-180-240-300

Tolerance + - °

Phasing

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 900

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 9.9...10.1

100 s: (9.7...10.3)

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 5.5...5.6

Del.quantity cm3/: 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1460 1st speed

: 9.10...9.50 travel mm

: 1350 2nd speed rpm

: 8.30...8.50 travel ran

: 550 3rd speed rpm

3.10...3.70 350 travel mm

4th speed rpm

travel mm : 1.30...1.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 99.0...101.0 Del.quantity 1000 : (97.0...103.0)

: 3.50 cm3

1000 : (6.00)

RATED SPEED

Spread

1st version

Control lever

position degrees: 43...51

Testing:

1st rack travel in: 9.50

rpm : 1365...1385 Speed

2nd rack travel in: 4.00

Speed rpm: 1470...1480 4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control lever

position degrees: 9...17 Setting point w/out bumper spring

: 350 Speed rpm Rack travel in mm: 5.5

Testina:

Speed : 100 rpm Minimum rack trave: 7.30 Speed rpm : 350

Rack travel in mm : 5.50...5.60

CONSTANT REGULATION

rpm : 390...480 Speed

START CUT-OUT

Speed 1/min: 180 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

: 1300 Speed rpm

Del.quantity cm3/: 101.0...105.0

1000 s: (99.0...107.0)

Spread

cm3 : 5.00 1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.50

Speed rpm : 1365...1385

STARTING FUEL DELIVERY

: 100 Speed rpm

Del.quantity cm3/: 140.0...180.0 1000 s: (137.0...183.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 350

Rack travel in mm : 5.50...5.60

Del.quantity cm3/: 16.0...20.0 1000 s: (13.5...22.5)

cm3 : 3.50 1000 s: (5.50) Spread

Remarks:

Perform pump setting only with IH hose with restriction of 1.2 mm diameter.

Before checking sleeve position, first adjust latching.

In unlatched condition, do not operate greater than n = 500 1/min

Set low idle at stop screw.

Set shutoff stop 1.5...2.0 mm before shutoff.

Note remarks

: IHC 8,3 S 3 Test sheet Edition : 29.06.90 : 02.05.90 Replaces Test oil : ISO-4113

Combination no. : 0 403 446 235

Injection pump

Pump designation : PES6MW100/320RS1171 : 0 413 406 156 EP type number

Governor

: RQV300...1300MW80-5 Governor design.

Governer no. : 0 420 083 197

Customer-spec. information Customer : RVI

Engine : MIDS 060212B

1st version kW : 113.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 033

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.00...3.10 Prestroke mm

: (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

: 0.50 (0.75) Tolerance + - °

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm: 300.0 Rack travel in mm: 5.8...5.4 Del.quantity cm3/: 1.8...2.2

100 s: (1.5...2.4)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed

travel mm : 8.70...9.10 1350

2nd speed rpm travel num 7.60...7.80

500 3rd speed rpm

travel mm

: 2.80...3.40 : 300

4th speed rpm : 1.20...1.60 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300Speed Aneroid pressure h: 700

Del.quantity : 88.0...90.0 1000 : (86.0...92.0)

3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 60...68

Testing: 1st rack travel in: 9.80 rpm : 1390...1400 Speed 2nd rack travel in: 4.00 rpm : 1505...1535 Speed 4th rack travel in: 1700 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 10...18 Setting point w/out bumper spring : 300 rpm Speed Rack travel in mm: 5.6 Testing: Speed : 200 rpm Minimum rack trave: 7.00 : 300 rpm Rack travel in mm : 5.80...5.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : -: 8.80...9.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 100 Rack travel in m: 9.30...9.40 2nd pressure hPa : 200 Rack travel in m: 10.20...10.50 3rd pressure hPa : 700 Rack travel in m: 10.80...10.90 START CUT-OUT 1/min: 230 (250) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 : 900 Speed rpm Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: rpm_ : 500 Speed Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.80

rpm : 1390...1400 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 90.0...110.0 1000 s: (87.0...113.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm

Rack travel in mm : 5.80...5.40 Del.quantity cm3/: 18.0...22.0 1000 s: (15.5...24.5) Spread cm3: 3.50 1000 s: (5.50)

Remarks:

Start-of-delivery mark mode with prestroke 3.00...3.10 mm at barrel 1